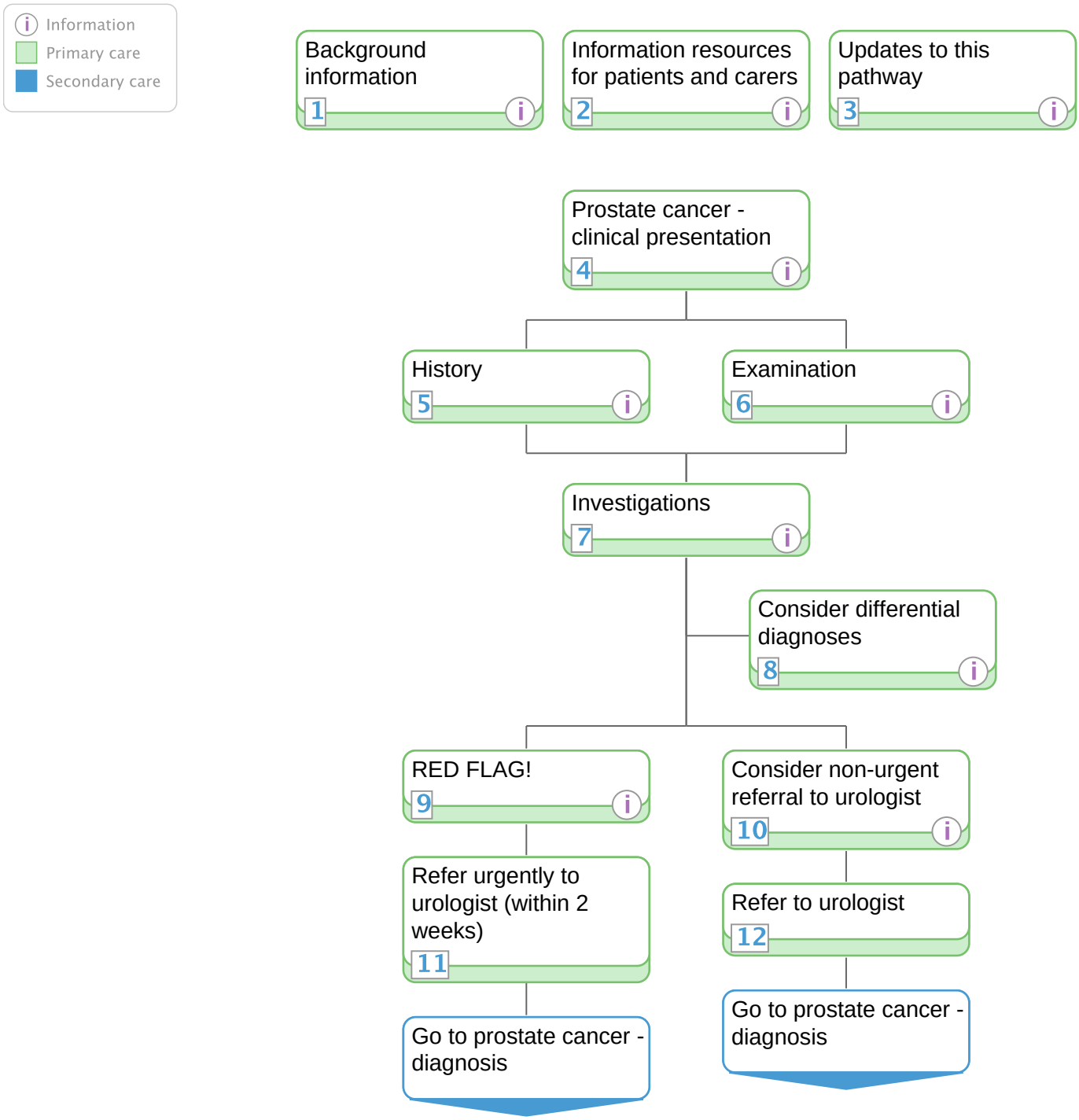
Prostate cancer - suspected



Last reviewed: 29-Jul-2010 Due for review: 31-May-2011 Printed on: 05-Aug-2010

IMPORTANT NOTE
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Prostate cancer - suspected

1 Background information

Quick info:

Scope:

- diagnosis, staging, and management of prostate cancer
- includes primary and secondary care
- includes follow-up, management of relapse, and management of advanced disease

Out of scope:

- palliative care (see 'Palliative care' pathway)
- screening and detection
- management and treatment related to erectile dysfunction (see 'Erectile dysfunction' pathway)

Definition:

- localised prostate cancer – cancer confined within the prostate capsule
- locally advanced prostate cancer – cancer extended outside the prostate capsule

Incidence and prevalence:

- in England and Wales, prostate cancer is the most common cancer in males [1]
- prostate cancer is the second most common cause of death in men [2]
- 3% of men die as a consequence of prostate cancer [1]
- in England and Wales, 1% of all men aged 85 and over are diagnosed with cancer every year [1]
- in Europe, the incidence rate is 214 cases per 1000 men [2]
- 25% of patients have advanced disease at the time of diagnosis [3]

Risk factors:

- hormones, eg high levels of testosterone and insulin-like growth factor (IGF-1)
- increasing age
- family history – risk of disease doubles if one first-line relative has had prostate cancer
- family history of breast cancer
- ethnic origin
- aetiology:
  - diet, eg increased risk is associated with diets high in fat
  - alcohol consumption
  - ultraviolet (UV) exposure
  - occupational exposure

Classification:

- tumour staging guides decisions regarding treatment, and is based on the tumour node metastasis (TNM) classification [EAU]:
  - T2 – tumour confined within the prostate
  - T3 – tumour extends through the prostate capsule
  - T4 – tumour is fixed or invades adjacent structure, ie bladder neck, external sphincter, rectum
  - N – regional lymph nodes
  - M – distant metastasis

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

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[5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-8.

[6] Prostate cancer risk management programme (PCRMC). Information for primary care: PSA testing in asymptomatic men. London: NHS Cancer Screening Programmes; 2009.

2 Information resources for patients and carers

Quick info:

Patients and carers in England and Wales can access this pathway through NHS Choices at http://healthguides.mapofmedicine.com/choices/map/prostate_cancer1.html

Prostate cancer - suspected

The following resources have been produced by organisations certified by The Information Standard:

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NB: This information appears on each page of this pathway.

3 Updates to this pathway

Quick info:

Date of publication: 30-Jul-2010

Interim update: A link to a ‘care bundle’ (based upon the NHS High Impact Interventions) has been included to reduce the risk of healthcare associated infections at relevant points along the patient journey.

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- [24] National Institute for Health and Clinical Excellence (NICE). Docetaxal for the treatment of hormone refractory prostate cancer. Technology appraisal guidance 101. London: NICE; 2006.

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- Dr Frank Chinegwundoh: Consultant Urological Surgeon, Bart’s and the London NHS Trust, London, UK
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Prostate cancer - suspected

NB: This information appears on each page of this pathway.

4 Prostate cancer - clinical presentation

Quick info:

Prostate cancer can present with the following:

- dysuria
- urinary hesitancy
- urinary frequency
- nocturia
- haematuria
- symptoms of obstructive uropathy
- erectile dysfunction
- lower back pain
- bone pain
- lethargy
- weight loss
- palpable lymph nodes

This information was drawn from the following references:

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes in urological cancers. London: NICE; 2002.

[7] Clinical Knowledge Summaries (CKS). Urological cancer - suspected. Newcastle upon Tyne: CKS; 2009.

[8] Map of Medicine (MoM) Clinical Editorial team and Fellows. London: MoM; 2010.

[9] National Institute for Health and Clinical Excellence (NICE). Referral guidelines for suspected cancer. Clinical guideline 27. London: NICE; 2005.

[10] Wallace TJ, Anscher MS. Prostate cancer. BMJ Best Practice; 2009 [accessed Jan-2010].

5 History

Quick info:

Ask patient about history of :

- lower urinary tract symptoms (LUTS), such as:
  - urinary urgency
  - nocturia
  - frequency
  - hesitancy
  - postmicturition dribble
  - poor stream
  - incomplete voiding
- erectile dysfunction (ED)
- haematuria
- risk factors associated with prostate cancer

This information was drawn from the following references:

[8] Map of Medicine (MoM) Clinical Editorial team and Fellows. London: MoM; 2010.

[10] Wallace TJ, Anscher MS. Prostate cancer. BMJ Best Practice. 2009 [accessed Jan-2010].

6 Examination

Quick info:

Early prostate cancer is typically asymptomatic (coexists with symptomatic benign prostate hyperplasia).

Examinations should include:

- assessment of haematuria – perform a urine dipstick analysis
- assessment of metastatic disease:
  - malaise
  - weight loss and cachexia
  - bone pain
  - sciatica

Prostate cancer - suspected

- neurological signs secondary to cord compression
- lymph node enlargement

- digital rectal examination (DRE):
  - can detect prostate cancer when the volume is approximately 0.2mL or more
  - hard regions or asymmetry may indicate prostate cancer
  - assess for:
    - induration
    - marked asymmetry
    - nodularity
  - an abnormal DRE is an indication for biopsy

This information was drawn from the following references:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

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7 Investigations

Quick info:

Prior to testing prostate-specific antigen (PSA) the patient should not have:

- a urinary tract infection (UTI) – postpone PSA test for at least 1 month following treatment of urinary infection [9]
- ejaculated within the previous 48 hours [6]
- exercised vigorously in the previous 48 hours [6]
- had a prostate biopsy in the previous 6 weeks; or [6]
- had a digital rectal examination (DRE) in the previous week [6]

Assess serum PSA levels [1,3]:

- high PSA levels are common in men with prostate cancer, but elevation is not specific for prostate cancer [11] – eg levels may be raised in the presence of:
  - benign prostatic hypertrophy [2]
  - prostatitis [2]
  - non-malignant conditions [2]
  - lower urinary tract infections (UTIs) [6]
- prostatitis or prostatic biopsy may affect PSA – consider deferring test in these circumstances to avoid unnecessary further investigation [8]
- PSA testing of asymptomatic patients or screening for prostate cancer is not a national screening policy in the UK [8]
- prior to PSA testing men should be given information about the reliability of results, and risks and benefits of the PSA test [3]
- acute urinary retention [8]

The Prostate Cancer Risk Management Programme (PCRMC) aims to ensure that all men considering a PSA test, without symptoms of prostate cancer, are informed of limitations and risks associated with the test; information sources include [6]:

- reference booklet for GPs discussing all the available evidence
- a summary sheet for GPs to help in consultations with the patient
- a patient information sheet
- Cancer Research UK statistics on prostate cancer

NB: Men are entitled to a free PSA test on the NHS provided they have made an informed decision based on PCRMC material and discussion with their GP [6].

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

Prostate cancer - suspected

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[6] Prostate cancer risk management programme (PCRMC). Information for primary care: PSA testing in asymptomatic men. London: NHS Cancer Screening Programmes; 2009.
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[9] National Institute for Health and Clinical Excellence (NICE). Referral guidelines for suspected cancer. London: NICE; 2005.
[11] American Urological Association (AUA). Prostate cancer: guideline for the management of clinically localised prostate cancer. 2007 update. Linthicum, MD: AUA; 2007.

8 Consider differential diagnoses

Quick info:

Differential diagnoses include:

- benign prostatic hyperplasia (BPH; see 'Benign prostatic hyperplasia' pathway) – can be identical to late stage prostate cancer
- calculi
- prostatic cysts
- prostatic tuberculosis
- prostatitis

This information was drawn from the following references:

[8] Map of Medicine (MoM) Clinical Editorial team and Fellows. London: MoM; 2010.
[10] Wallace TJ, Anscher MS. Prostate cancer. BMJ Best Practice; 2009 [accessed Jan-2010].

9 RED FLAG!

Quick info:

Urgent referral (to be seen within 2 weeks) is indicated if [9]:

- a hard irregular prostate is felt on digital rectal examination (DRE)
- elevated age-specific prostate-specific antigen (PSA)
- the patient is symptomatic with high PSA levels

If there is doubt as to whether to refer an asymptomatic male with a borderline level of PSA [9]:

- repeat PSA after 1-3 months
- if second test indicates PSA is rising (ie PSA velocity is abnormally high), refer urgently

Reference:

[9] National Institute for Health and Clinical Excellence (NICE). Referral guidelines for suspected cancer. Clinical guideline 27. London: NICE; 2005.

10 Consider non-urgent referral to urologist

Quick info:

Non-urgent referral is indicated if [9]:

- the prostate is enlarged
- the prostate-specific antigen (PSA) is in the age-specific reference range
- bothersome urinary symptoms are present

If there is doubt as to whether to refer an asymptomatic male with a borderline level of PSA [9]:

- repeat PSA after 1-3 months
- if second test indicates PSA is rising (ie PSA velocity is abnormally high), refer urgently

Reference:

[9] National Institute for Health and Clinical Excellence (NICE). Referral guidelines for suspected cancer. Clinical guideline 27. London: NICE; 2005.

Prostate cancer - suspected

Key Dates

Due for review: 31-May-2011
Last reviewed: 29-Jul-2010, by International
Updated: 29-Jul-2010

Accreditations

The pathway is accredited by:

The Chief Knowledge Officer of the NHS:
Accreditation attained: 30-Apr-2010
Due for review: 31-May-2011
Disclaimer

Evidence summary for Prostate cancer - suspected

This pathway has been developed according to the Map of Medicine editorial methodology (http://mapofmedicine.com/whatisthemap/editorialmethodology). The content of this pathway is based on high-quality guidelines [1-3,5,7,9,11,20,24], critically appraised meta-analyses and systematic reviews [10,12-19,21-23]. Practice-based knowledge has been added by contributors with front-line clinical experience [4,8], including any literature endorsed by the contributor group [6].

Search date: Dec-2009

References

This is a list of all the references that have passed critical appraisal for use in the pathway Prostate cancer

ID	Reference
1	National Institute for Health and Clinical Excellence (NICE). Prostate cancer: diagnosis and treatment. Clinical guideline 58. London: NICE; 2008. http://www.nice.org.uk/nicemedia/pdf/CG58FullGuideline.pdf
2	Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. The Netherlands: European Association of Urology (EAU); 2009. http://www.uroweb.org/fileadmin/tx_eauguidelines/2009/Full/Prostate_Cancer.pdf
3	National Institute for Health and Clinical Excellence (NICE). Improving outcomes in urological cancers. London: NICE; 2002. http://www.nice.org.uk/nicemedia/pdf/Urological_Manual.pdf
4	Contributors invited by Map of Medicine. 2010.
5	Horwich A, Parker C, Kataja V. Prostate cancer: ESMO Clinical Recommendations for diagnosis, treatment and follow-up. Ann Oncol 2009; 18: iv76-8. http://www.ncbi.nlm.nih.gov/pubmed/19454471
6	Prostate Cancer Risk Management Programme (PCRMP). Information for primary care: PSA testing in asymptomatic men. London: NHS Screening Programmes; 2009. http://www.cancerscreening.nhs.uk/prostate/prostate-booklet-text.pdf
7	Clinical Knowledge Summaries (CKS). Urological cancer - suspected. Newcastle Upon Tyne: CKS; 2009. http://www.cks.nhs.uk/urological_cancer_suspected/management/quick_answers/scenario_urological_cancer_suspected/prostate_cancer
8	Map of Medicine (MoM). London: MoM; 2010.
9	National Institute for Health and Clinical Excellence (NICE). Referral guidelines for suspected cancer. London: NICE; 2005. http://www.nice.org.uk/nicemedia/pdf/cg027niceguideline.pdf
10	Wallace TJ, Anscher MS. Prostate cancer. BMJ Best Practice; 2010. http://bestpractice.bmj.com/best-practice/monograph/254.html
11	American Urological Association (AUA). Prostate cancer: guideline for the management of clinically localised prostate cancer. 2007 update. Linthicum, MD: AUA; 2007. http://www.auanet.org/content/guidelines-and-quality-care/clinical-guidelines/main-reports/proscan07/content.pdf
12	Scattoni V, Zlotta A, Montironi R. Extended and saturation prostatic biopsy in the diagnosis and characterisation of prostate cancer: a critical analysis of the literature. Eur Urol 2007; 52: 1309-22. http://www.ncbi.nlm.nih.gov/pubmed/17720304
13	Hovels AM, Heesakkers RA, Adang EM. The diagnostic accuracy of CT and MRI in the staging of pelvic lymph nodes in patients with prostate cancer: a meta-analysis. Clin Radiol 2008; 63: 387-95. http://www.ncbi.nlm.nih.gov/pubmed/18325358

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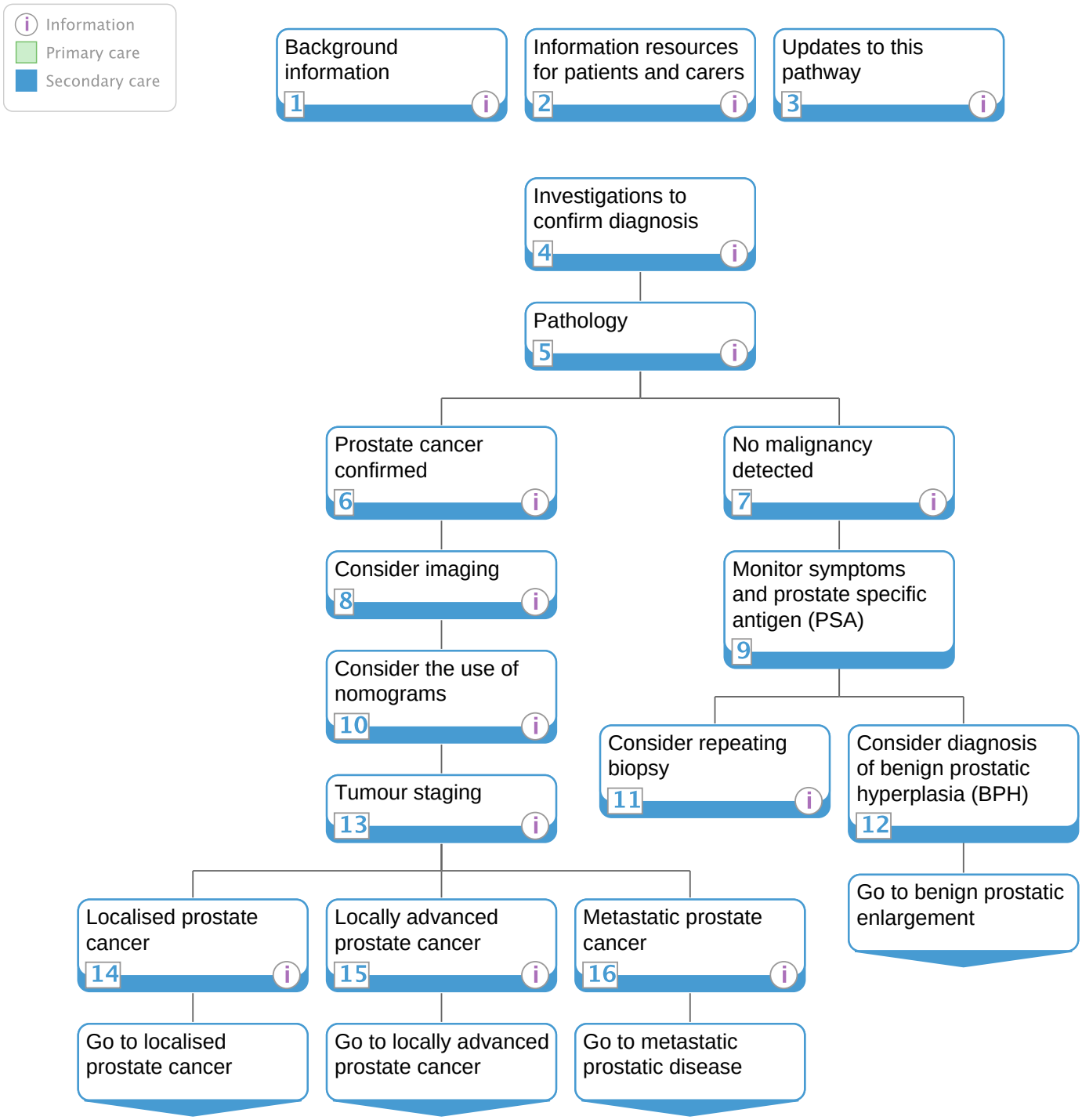
Prostate cancer - suspected

ID	Reference
14	Cohen MS, Hanley RS, Kurteva T et al. Comparing the Gleason prostate biopsy and Gleason prostatectomy grading system: the Lahey Clinic Medical Center experience and an international meta-analysis. Eur Urol 2008; 54: 371-381. http://www.ncbi.nlm.nih.gov/pubmed/18395322
15	Parsons JK, Bennett JL. Outcomes of retropubic, laparoscopic, and robotic-assisted prostatectomy. Urology 2008; 72: 412-6. http://www.ncbi.nlm.nih.gov/pubmed/18267330
16	Eng MK, Katz MH, Bernstein AJ et al. Laparoscopic port-site metastasis in urologic surgery. J Endourol 2008; 22: 1581-5. http://www.ncbi.nlm.nih.gov/pubmed/18620507
17	Shelley MD, Kumar S, Wilt T et al. A systematic review and meta-analysis of randomised trials of neo-adjuvant hormone therapy for localised and locally advanced prostate carcinoma. Cancer Treat Rev 2009; 35: 9-17. http://www.ncbi.nlm.nih.gov/pubmed/18926640
18	Morgan SC, Waldron TS, Eapen L et al. Adjuvant radiotherapy following radical prostatectomy for pathologic T3 or margin-positive prostate cancer: a systematic review and meta-analysis. Radiother Oncol 2008; 88: 1-9. http://www.ncbi.nlm.nih.gov/pubmed/18501455
19	Pieters BR, de Back DZ, Koning C et al. Comparison of three radiotherapy modalities on biochemical control and overall survival for the treatment of prostate cancer: a systematic review. Radiother Oncol 2009; 93: 168-173. http://www.ncbi.nlm.nih.gov/pubmed/19748692
20	National Institute for Health and Clinical Excellence (NICE). High dose rate brachytherapy in combination with external-beam radiotherapy for localised prostate cancer. London: NICE; 2006. http://www.nice.org.uk/nicemedia/pdf/IPG174guidance.pdf
21	Boustead G, Edwards SJ. Systematic review of early vs deferred hormonal treatment of locally advanced prostate cancer: a meta-analysis of randomized controlled trials. BJU Int 2007; 99: 1383-9. http://www.ncbi.nlm.nih.gov/pubmed/17346269
22	Taylor LG, Canfield SE, Du XL. Review of major adverse effects of androgen-deprivation therapy in men with prostate cancer. Cancer 2009; 115: 2388-99. http://www.ncbi.nlm.nih.gov/pubmed/19399748
23	Shelley MD, Kumar S, Coles B et al. Adjuvant hormone therapy for localised and locally advanced prostate carcinoma: a systematic review and meta-analysis of randomised trials. Cancer Treat Rev 2009; 35: 540-6. http://www.ncbi.nlm.nih.gov/pubmed/19493624
24	National Institute for Health and Clinical Excellence. Docetaxel for the treatment of hormone refractory prostate cancer. National Institute for Health and Clinical Excellence 2006; http://www.nice.org.uk/nicemedia/pdf/TA101guidance.pdf

Disclaimers

Prostate cancer - diagnosis



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Prostate cancer - diagnosis

1 Background information

Quick info:

Scope:

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- includes primary and secondary care
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Out of scope:

- palliative care (see 'Palliative care' pathway)
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Prostate cancer - diagnosis

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4 Investigations to confirm diagnosis

Quick info:

Investigations should include:

- transrectal ultrasonography (TRUS) [1,2]:
  - only 60% of tumours are visible with TRUS [2]
  - cannot determine tumour extension [2]
  - approximately two-thirds of patients undergoing TRUS due to high PSA levels do not have prostate cancer [6]
- ultrasound guided biopsy:
  - in order to identify whether a biopsy is necessary the following should be considered:
    - prostate-specific antigen (PSA) levels [1,5] – the first elevated PSA level should not prompt an immediate biopsy; raised PSA levels should be verified after a few weeks using the same assay and conditions (eg no ejaculation and no manipulation) [2]
    - digital rectal examination (DRE) results [1,2,5]
    - comorbidities [1,2,5]
    - ethnicity [5]
    - history of previous biopsy [5]
    - patient values [5]
    - age [1,2,5]
  - if obvious suspicion of prostate cancer is high (high PSA and evidence of bone metastases), biopsy is not required for histological confirmation [1]
  - prior to performing the biopsy, patient and partner should be provided with the following to enable them to decide whether they wish to have the biopsy [1]:
    - information, including an explanation of risks and benefits
    - support
    - adequate time to consider decision
  - biopsy sample sites should be as far posterior and lateral in the peripheral gland as possible – additional sites can be selected based on DRE and TRUS results [2]
  - extended and saturation biopsy schemes should be performed at first biopsy [12]
  - a minimum of eight cores should be obtained from biopsy [5], however NHS Prostate Cancer Risk Management Programme (PCRMP) recommends taking 10-12 cores [6]
  - results should be reviewed by a urological cancer multidisciplinary team (MDT) [1]
  - consider a seminal vesicle biopsy – should be reserved for patients at risk of seminal vesicle invasion and if biopsy results are likely to influence treatment decisions [2]
  - complications and limitations include:
    - haematospermia [2]
    - bleeding from urethra, bladder [2]
    - urosepsis [2]
    - urinary retention [2]
    - prostatitis [2]
    - epididymitis [2]
    - tumour is missed (20% of tumours are missed) [6]
    - diagnosis of clinically insignificant prostate cancer can have an unnecessary impact on the patient [6]
    - anxiety due to necessity of re-biopsy [6]
- imaging, such as [6]:
  - magnetic resonance image (MRI)
  - CT scan
  - X-ray
  - bone scan

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-8.

[6] Prostate Cancer Risk Management Programme (PCRMC). Information for primary care: PSA testing in asymptomatic men. London: NHS Cancer Screening Programmes; 2009.

Prostate cancer - diagnosis

[12] Scattoni V, Zlotta A, Montironi R et al. Extended and saturation prostatic biopsy in the diagnosis and characterisation of prostate cancer: a critical analysis of the literature. Eur Urol 2007; 52: 1309-22.

5 Pathology

Quick info:

Assess the following:

- whether cells are cancerous or benign [8]
- Gleason score – histopathological assessment of cancerous tissue**:**
  - is based on the assessment of biopsy tissue [2]
  - assigns grades (Gleason grade 1 [least aggressive] - 5 [most aggressive]) to cancerous tissue based on arrangement of cancer cells compared with normal prostate cells [11]
  - tumours may show multiple grades within the biopsy; to take into account the multiple grades [11]:
    - a primary grade is assigned to the most prominent grade present; and
    - a secondary grade is assigned to the second most prominent grade
    - if the biopsy mainly consists of grade 4 or 5 tissue, lower scores should be ignored [2]
  - the two most common patterns of cells within the cancerous tissue are assigned a grade and added together to determine the Gleason score (range 2-10) [2,11]
  - with each increase in score, there is an increase in tumour aggressiveness [11]
  - the length of tumour involvement per biopsy correlates with tumour volume [2]

References:

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[8] Map of Medicine (MoM) Clinical Editorial team and Fellows. London: MoM; 2010.

[11] American Urological Association (AUA). Prostate cancer. guidelines for the management of clinically localised prostate cancer: 2007 update. Linthicum, MD: AUA; 2007.

6 Prostate cancer confirmed

Quick info:

Following confirmation of prostate cancer, treatment intent should be decided based on [1]:

- life expectancy
- patient values
- anticipated clinical course of prostate cancer

Treatment intent can be [1]:

- radical; or
- non-radical

Reference:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

7 No malignancy detected

Quick info:

Results of all biopsies should be reviewed by a urological cancer-led multidisciplinary team (MDT) [1].

Reference:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

8 Consider imaging

Quick info:

Imaging is not routinely recommended in patients intended for non-radical treatment [1]; imaging techniques include:

- magnetic resonance image (MRI) – most common and most accurate form of imaging for T-staging [1]

Prostate cancer - diagnosis

- endorectal MRI [2]
- MRI of the pelvis or CT scan, if MRI is contraindicated (high-risk localised and locally advanced disease) [1,5]
- magnetic resonance spectroscopy (MRS):
  - experimental technique [1]
  - based on the concentration of metabolites in the prostate gland [1,2]
- isotope bone scan (not recommended for low-risk localised disease) – consider for asymptomatic patients at high-risk of bone complications while hormonal treatments are being deferred [1]
- bone scintigraphy – consider if [5]:
  - bone metastases are suspected
  - the Gleason score is greater than 4+3
  - serum prostate-specific antigen (PSA) is greater than 15mg/L
- MRI and CT scan to assess lymph node metastases, however a recent meta-analysis suggests that these imaging modalities do not reliably detect lymph node metastases [13]
- positron-emission tomography (PET) imaging – not routinely recommended [1]

NB: Biopsy can affect image interpretation for at least 4 weeks [1].

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-8.

[13] Hovels Am, Heesakkers RA, Adang EM. The diagnostic accuracy of CT and MRI in the staging of pelvic lymph nodes in patients with prostate cancer: a meta-analysis. Clin Radiol; 63: 387-95.

10 Consider the use of nomograms

Quick info:

Nomograms use predictive factors, eg T-stage, Gleason score, prostate-specific antigen (PSA), and histological findings to estimate risk of [1]:

- metastatic spread
- lymph node involvement
- recurrence following treatment

NB: The reliability, validity, and limitation of the prediction should be explained to the patient [1].

Reference:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

11 Consider repeating biopsy

Quick info:

Consider re-biopsy after multidisciplinary team (MDT) review of [1]:

- life expectancy [8]
- prostate-specific antigen (PSA) levels [2]
- digital rectal examination (DRE) findings [2]
- prostate size [8]
- extensive prostatic intra-epithelial neoplasia [2]

Extended and saturation biopsy schemes should be performed at second biopsy [12].

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[8] Map of Medicine (MoM) Clinical Editorial team and Fellows. London: MoM; 2010.

[12] Scattoni V, Zlotta A, Montironi R et al. Extended and saturation prostatic biopsy in the diagnosis and characterisation of prostate cancer: a critical analysis of the literature. Eur Urol 2007; 52: 1309-22.

Prostate cancer - diagnosis

13 Tumour staging

Quick info:

Tumour staging:

- guides treatment decision and is based on the tumour node metastasis (TNM) classification [2]:
  - T2 – tumour confined within the prostate
  - T3 – tumour extends through the prostate capsule
  - T4 – tumour is fixed or invades adjacent structure, ie bladder neck, external sphincter, rectum
  - N – regional lymph nodes
  - M – distant metastasis
- Gleason score [2]:
  - used for grading adenocarcinoma of the prostate
  - assessed using biopsy tissue (core biopsy or operative specimens)
  - ranges between 2 and 10, with 10 being the most aggressive tumour
  - in clinical practice, the score usually ranges between 6 and 10

NB: The Lahey Clinic Medical Center Experience and an international meta-analysis found that the Gleason score had an overall inaccuracy of 63%; upgrading occurred in 30% of patients and downgrading occurred in 6% of patients [14].

References:

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[14] Cohen MS, Hanley RS, Kurteva T. Comparing the Gleason score of prostate biopsy and Gleason score prostatectomy grading system: The Lahey Clinic Medical Center Experience and an international meta-analysis. Eur Urol 2008; 54: 371-81.

14 Localised prostate cancer

Quick info:

Localised prostate cancer:

- clinically confined within the capsule [8]
- more than 90% of prostate cancer patients are diagnosed with clinically localised disease [2]

References:

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[8] Map of Medicine (MoM) Clinical Editorial team and Fellows. London: MoM; 2010.

15 Locally advanced prostate cancer

Quick info:

Locally advanced prostate cancer is defined as spread through the capsule, into the surrounding tissues or lymph nodes [8].

Reference:

[8] Map of Medicine (MoM) Clinical Editorial team and Fellows. London: MoM; 2010.

16 Metastatic prostate cancer

Quick info:

Metastatic disease is defined as prostate cancer that has spread beyond the prostate and pelvic lymph nodes [1].

Reference:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

Prostate cancer - diagnosis

Key Dates

Due for review: 31-May-2011
Last reviewed: 29-Jul-2010, by International
Updated: 29-Jul-2010

Accreditations

The pathway is accredited by:

The Chief Knowledge Officer of the NHS:
Accreditation attained: 30-Apr-2010
Due for review: 31-May-2011
Disclaimer

Evidence summary for Prostate cancer - diagnosis

This pathway has been developed according to the Map of Medicine editorial methodology (http://mapofmedicine.com/whatisthemap/editorialmethodology). The content of this pathway is based on high-quality guidelines [1-3,5,7,9,11,20,24], critically appraised meta-analyses and systematic reviews [10,12-19,21-23]. Practice-based knowledge has been added by contributors with front-line clinical experience [4,8], including any literature endorsed by the contributor group [6].

Search date: Dec-2009

References

This is a list of all the references that have passed critical appraisal for use in the pathway Prostate cancer

ID	Reference
1	National Institute for Health and Clinical Excellence (NICE). Prostate cancer: diagnosis and treatment. Clinical guideline 58. London: NICE; 2008. http://www.nice.org.uk/nicemedia/pdf/CG58FullGuideline.pdf
2	Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. The Netherlands: European Association of Urology (EAU); 2009. http://www.uroweb.org/fileadmin/tx_eauguidelines/2009/Full/Prostate_Cancer.pdf
3	National Institute for Health and Clinical Excellence (NICE). Improving outcomes in urological cancers. London: NICE; 2002. http://www.nice.org.uk/nicemedia/pdf/Urological_Manual.pdf
4	Contributors invited by Map of Medicine. 2010.
5	Horwich A, Parker C, Kataja V. Prostate cancer: ESMO Clinical Recommendations for diagnosis, treatment and follow-up. Ann Oncol 2009; 18: iv76-8. http://www.ncbi.nlm.nih.gov/pubmed/19454471
6	Prostate Cancer Risk Management Programme (PCRMP). Information for primary care: PSA testing in asymptomatic men. London: NHS Screening Programmes; 2009. http://www.cancerscreening.nhs.uk/prostate/prostate-booklet-text.pdf
7	Clinical Knowledge Summaries (CKS). Urological cancer - suspected. Newcastle Upon Tyne: CKS; 2009. http://www.cks.nhs.uk/urological_cancer_suspected/management/quick_answers/scenario_urological_cancer_suspected/prostate_cancer
8	Map of Medicine (MoM). London: MoM; 2010.
9	National Institute for Health and Clinical Excellence (NICE). Referral guidelines for suspected cancer. London: NICE; 2005. http://www.nice.org.uk/nicemedia/pdf/cg027niceguideline.pdf
10	Wallace TJ, Anscher MS. Prostate cancer. BMJ Best Practice; 2010. http://bestpractice.bmj.com/best-practice/monograph/254.html
11	American Urological Association (AUA). Prostate cancer: guideline for the management of clinically localised prostate cancer. 2007 update. Linthicum, MD: AUA; 2007. http://www.auanet.org/content/guidelines-and-quality-care/clinical-guidelines/main-reports/proscan07/content.pdf
12	Scattoni V, Zlotta A, Montironi R. Extended and saturation prostatic biopsy in the diagnosis and characterisation of prostate cancer: a critical analysis of the literature. Eur Urol 2007; 52: 1309-22. http://www.ncbi.nlm.nih.gov/pubmed/17720304
13	Hovels AM, Heesakkers RA, Adang EM. The diagnostic accuracy of CT and MRI in the staging of pelvic lymph nodes in patients with prostate cancer: a meta-analysis. Clin Radiol 2008; 63: 387-95. http://www.ncbi.nlm.nih.gov/pubmed/18325358

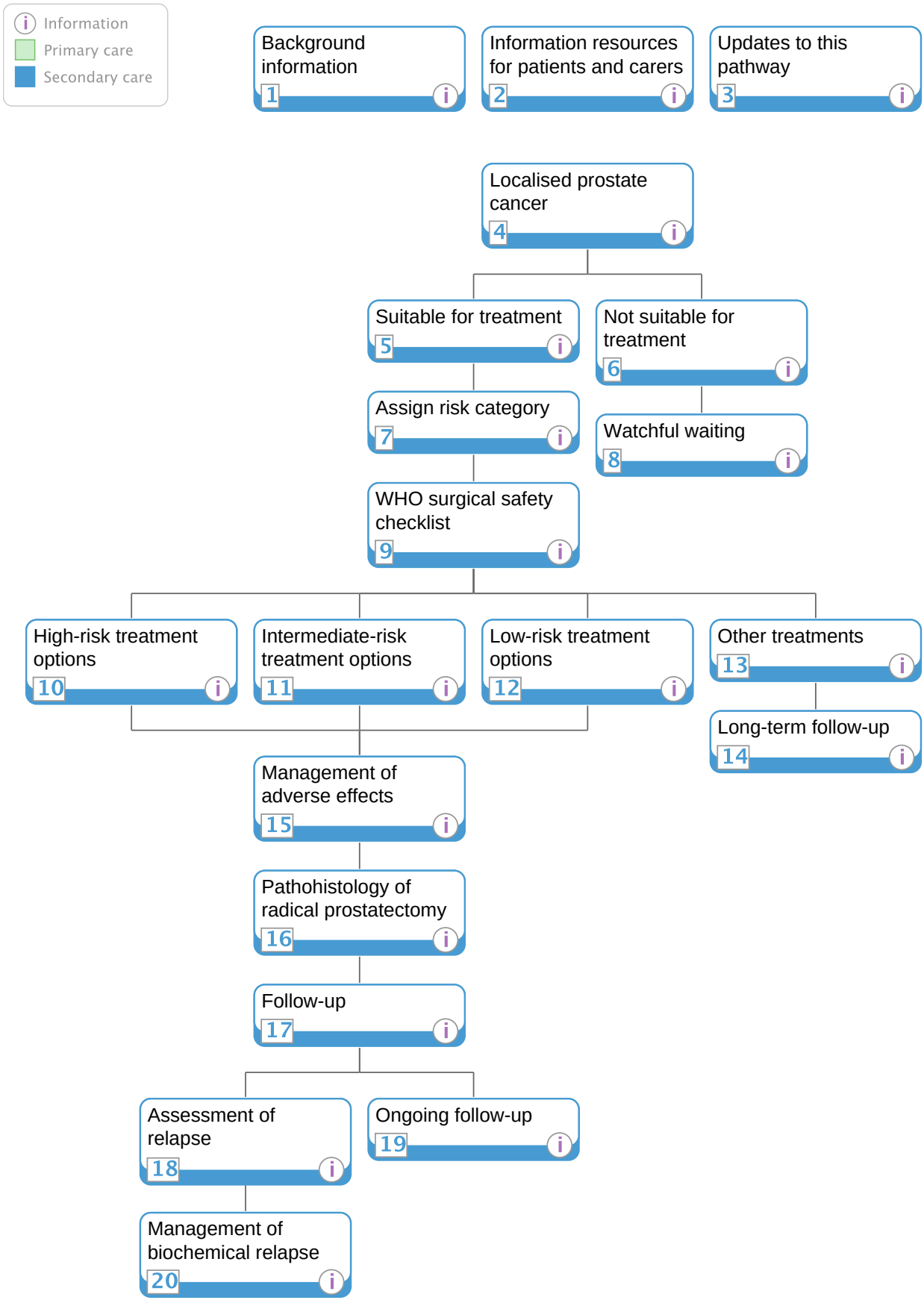
IMPORTANT NOTE
Last reviewed refers to the date of completion of the most recent review process for a pathway. All pathways are reviewed regularly every twelve months, and on an ad hoc basis if required.

Prostate cancer - diagnosis

ID	Reference
14	Cohen MS, Hanley RS, Kurteva T et al. Comparing the Gleason prostate biopsy and Gleason prostatectomy grading system: the Lahey Clinic Medical Center experience and an international meta-analysis. Eur Urol 2008; 54: 371-381. http://www.ncbi.nlm.nih.gov/pubmed/18395322
15	Parsons JK, Bennett JL. Outcomes of retropubic, laparoscopic, and robotic-assisted prostatectomy. Urology 2008; 72: 412-6. http://www.ncbi.nlm.nih.gov/pubmed/18267330
16	Eng MK, Katz MH, Bernstein AJ et al. Laparoscopic port-site metastasis in urologic surgery. J Endourol 2008; 22: 1581-5. http://www.ncbi.nlm.nih.gov/pubmed/18620507
17	Shelley MD, Kumar S, Wilt T et al. A systematic review and meta-analysis of randomised trials of neo-adjuvant hormone therapy for localised and locally advanced prostate carcinoma. Cancer Treat Rev 2009; 35: 9-17. http://www.ncbi.nlm.nih.gov/pubmed/18926640
18	Morgan SC, Waldron TS, Eapen L et al. Adjuvant radiotherapy following radical prostatectomy for pathologic T3 or margin-positive prostate cancer: a systematic review and meta-analysis. Radiother Oncol 2008; 88: 1-9. http://www.ncbi.nlm.nih.gov/pubmed/18501455
19	Pieters BR, de Back DZ, Koning C et al. Comparison of three radiotherapy modalities on biochemical control and overall survival for the treatment of prostate cancer: a systematic review. Radiother Oncol 2009; 93: 168-173. http://www.ncbi.nlm.nih.gov/pubmed/19748692
20	National Institute for Health and Clinical Excellence (NICE). High dose rate brachytherapy in combination with external-beam radiotherapy for localised prostate cancer. London: NICE; 2006. http://www.nice.org.uk/nicemedia/pdf/IPG174guidance.pdf
21	Boustead G, Edwards SJ. Systematic review of early vs deferred hormonal treatment of locally advanced prostate cancer: a meta-analysis of randomized controlled trials. BJU Int 2007; 99: 1383-9. http://www.ncbi.nlm.nih.gov/pubmed/17346269
22	Taylor LG, Canfield SE, Du XL. Review of major adverse effects of androgen-deprivation therapy in men with prostate cancer. Cancer 2009; 115: 2388-99. http://www.ncbi.nlm.nih.gov/pubmed/19399748
23	Shelley MD, Kumar S, Coles B et al. Adjuvant hormone therapy for localised and locally advanced prostate carcinoma: a systematic review and meta-analysis of randomised trials. Cancer Treat Rev 2009; 35: 540-6. http://www.ncbi.nlm.nih.gov/pubmed/19493624
24	National Institute for Health and Clinical Excellence. Docetaxel for the treatment of hormone refractory prostate cancer. National Institute for Health and Clinical Excellence 2006; http://www.nice.org.uk/nicemedia/pdf/TA101guidance.pdf

Disclaimers

Localised prostate cancer



Last reviewed: 29-Jul-2010 Due for review: 31-May-2011 Printed on: 05-Aug-2010

IMPORTANT NOTE
Last reviewed refers to the date of completion of the most recent review process for a pathway. All pathways are reviewed regularly every twelve months, and on an ad hoc basis if required.

Localised prostate cancer

1 Background information

Quick info:

Scope:

- diagnosis, staging, and management of prostate cancer
- includes primary and secondary care
- includes follow-up, management of relapse, and management of advanced disease

Out of scope:

- palliative care (see 'Palliative care' pathway)
- screening and detection
- management and treatment related to erectile dysfunction (see 'Erectile dysfunction' pathway)

Definition:

- localised prostate cancer – cancer confined within the prostate capsule
- locally advanced prostate cancer – cancer extended outside the prostate capsule

Incidence and prevalence:

- in England and Wales, prostate cancer is the most common cancer in males [1]
- prostate cancer is the second most common cause of death in men [2]
- 3% of men die as a consequence of prostate cancer [1]
- in England and Wales, 1% of all men aged 85 and over are diagnosed with cancer every year [1]
- in Europe, the incidence rate is 214 cases per 1000 men [2]
- 25% of patients have advanced disease at the time of diagnosis [3]

Risk factors:

- hormones, eg high levels of testosterone and insulin-like growth factor (IGF-1)
- increasing age
- family history – risk of disease doubles if one first-line relative has had prostate cancer
- family history of breast cancer
- ethnic origin
- aetiology:
  - diet, eg increased risk is associated with diets high in fat
  - alcohol consumption
  - ultraviolet (UV) exposure
  - occupational exposure

Classification:

- tumour staging guides decisions regarding treatment, and is based on the tumour node metastasis (TNM) classification [EAU]:
  - T2 – tumour confined within the prostate
  - T3 – tumour extends through the prostate capsule
  - T4 – tumour is fixed or invades adjacent structure, ie bladder neck, external sphincter, rectum
  - N – regional lymph nodes
  - M – distant metastasis

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes in urological cancers. London: NICE; 2002.

[4] Contributors invited by Map of Medicine; 2010.

[5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-8.

[6] Prostate cancer risk management programme (PCRMC). Information for primary care: PSA testing in asymptomatic men. London: NHS Cancer Screening Programmes; 2009.

2 Information resources for patients and carers

Quick info:

Patients and carers in England and Wales can access this pathway through NHS Choices at http://healthguides.mapofmedicine.com/choices/map/prostate_cancer1.html

Localised prostate cancer

The following resources have been produced by organisations certified by The Information Standard:

- 'Prostate cancer' (URL) from Bupa at http://www.bupa.co.uk/
- 'Prostate cancer' (URL) from Cancer Research UK at http://www.cancerresearchuk.org/
- 'Prostate cancer' (URL) from Datapharm at http://www.medguides.medicines.org.uk
- 'Prostate cancer' (URL) from Macmillan Cancer Support at http://www.macmillan.org.uk
- 'Understanding NICE guidance: Prostate cancer' (PDF) from National Institute for Health and Clinical Excellence (NICE) at http://www.nice.org.uk
- 'Prostate cancer' (PDF) from Patient UK at http://www.patient.co.uk
- 'Information' (URL) from The Prostate Cancer Charity at http://www.prostate-cancer.org.uk

The following resources have been written or recommended by national policy bodies or guideline producers whose content has informed this pathway:

- 'Cancer of the prostate' (URL) from Clinical Knowledge Summaries (CKS) at http://www.cks.nhs.uk

Information for carers and people with disabilities is available at:

- 'Caring for someone' (URL) from Directgov at http://www.direct.gov.uk
- 'Disabled people' (URL) from Directgov at http://www.direct.gov.uk

Explanations of clinical laboratory tests used in diagnosis and treatment are available at ‘Understanding Your Tests’ (URL) from Lab Tests Online-UK at http://www.labtestsonline.org.uk

The Map of Medicine is committed to providing high quality health and social care information for patients and carers. For details on how these resources are identified, please see 'Map of Medicine Patient and Carer Information'.

NB: This information appears on each page of this pathway.

3 Updates to this pathway

Quick info:

Date of publication: 30-Jul-2010

Interim update: A link to a ‘care bundle’ (based upon the NHS High Impact Interventions) has been included to reduce the risk of healthcare associated infections at relevant points along the patient journey.

Date of publication: 29-Apr-2010

Three nodes now appear at the top of each pathway page. These provide:

- easy access to scope and background information on each page of the pathway whilst reducing repetition between nodes
- easy access to patient resources/leaflets
- information on pathway updates

This pathway has been updated in line with the following guidelines:

- [1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.
- [2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.
- [3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes in urological cancers. London: NICE; 2002.
- [5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-78.
- [7] Clinical Knowledge Summaries (CKS). Urological cancer - suspected. Newcastle upon Tyne: CKS; 2009.
- [9] National Institute for Health and Clinical Excellence (NICE). Referral guidelines for suspected cancer. Clinical guideline 27. London: NICE; 2005.
- [11] American Urological Association (AUA). Prostate cancer. Guidelines for the management of clinically localised prostate cancer: 2007 update. Linthicum, MD: AUA; 2007.
- [20] National Institute for Health and Clinical Excellence (NICE). High dose rate brachytherapy in combination with external-beam radiotherapy for localised prostate cancer. Interventional procedure guidance 174. London: NICE; 2006.
- [24] National Institute for Health and Clinical Excellence (NICE). Docetaxal for the treatment of hormone refractory prostate cancer. Technology appraisal guidance 101. London: NICE; 2006.

Further information was provided by the following references: [4,6,8,10,12-19,21-23]. For more information, please see the pathway's Provenance certificate.

Practice-based knowledge has been contributed to this pathway by:

- Dr Frank Chinegwundoh: Consultant Urological Surgeon, Bart’s and the London NHS Trust, London, UK
- Mr George Fowlis: Consultant Urological Surgeon, North Middlesex University Hospital, Middlesex, UK
- Selected members of Map of Medicine (MoM) Clinical Editorial team and Fellows board

The pathway has been completely restructured and redrafted in line with the Map of Medicine's editorial methodology and to bring it in line with current clinical practice.

Localised prostate cancer

NB: This information appears on each page of this pathway.

4 Localised prostate cancer

Quick info:

Localised prostate cancer:

- clinically confined within the capsule [8]
- more than 90% of prostate cancer patients are diagnosed with clinically localised disease [2]

References:

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[8] Map of Medicine (MoM) Clinical Editorial team and Fellows. London: MoM; 2010.

5 Suitable for treatment

Quick info:

Decision for treatment should be based on [11]:

- life expectancy
- health status
- tumour characteristics, including:
  - prostate-specific antigen (PSA) level
  - Gleason score
  - tumour stage
  - risk stratification

Patients and carers should have access to a specialist nurse, who should provide advice and arrange referrals when treatments are required [3].

References:

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes for urological cancer. London: NICE; 2002.

[11] American Urological Association (AUA). Prostate cancer. guidelines for the management of clinically localised prostate cancer: 2007 update. Linthicum, MD: AUA; 2007.

6 Not suitable for treatment

Quick info:

Decision for treatment should be based on [11]:

- life expectancy
- health status
- tumour characteristics, including:
  - prostate-specific antigen (PSA) level
  - Gleason score
  - tumour stage
  - risk stratification

Patients and carers should have access to a specialist nurse, who should provide advice and arrange referrals when treatments are required [3].

References:

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes for urological cancer. London: NICE; 2002.

[11] American Urological Association (AUA). Prostate cancer. guidelines for the management of clinically localised prostate cancer: 2007 update. Linthicum, MD: AUA; 2007.

7 Assign risk category

Quick info:

Assign risk category for all those newly diagnosed with localised prostate cancer [1]:

- high-risk [5]:

Localised prostate cancer

- prostate-specific antigen (PSA) over 20ng/mL
- Gleason score 8-10
- clinical stage T3-T4

- intermediate-risk [11]:
  - PSA 10-20ng/mL
  - Gleason score 7
  - clinical stage T2b-T2c
- low-risk [5,11]:
  - localised PCa – T1c-T2a
  - Gleason score between 2-6
  - PSA less than 10ng/mL

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-78.

[11] American Urological Association (AUA). Prostate cancer. guidelines for the management of clinically localised prostate cancer: 2007 update. Linthicum, MD: AUA; 2007.

8 Watchful waiting

Quick info:

Watchful waiting:

- involves the decision to avoid treatment unless progressive disease develops [1]
- should be considered for patients:
  - not suitable for radical treatment [11]
  - with significant comorbidities or older patients [1] with a limited life expectancy [2]
- should be considered for older patients with less aggressive cancer [2]
- should be considered for patients thought unlikely to have significant progression of prostate cancer during their lifespan [1]
- involves regular follow-up in primary care [6]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[6] Prostate cancer risk management programme (PCRMC). Information for primary care: PSA testing in asymptomatic men. London: NHS Cancer Screening Programmes; 2009.

[11] American Urological Association (AUA). Prostate cancer. Guidelines for the management of clinically localised prostate cancer: 2007 update. Linthicum, MD: AUA; 2007.

9 WHO surgical safety checklist

Quick info:

Complete the National Patient Safety Agency (NPSA) World Health Organization (WHO) Surgical Safety Checklist for every patient undergoing a surgical procedure in England and Wales. This has been adapted from the WHO Surgical Safety Checklist.

For high impact interventions to reduce healthcare associated infections – see 'Surgical site infection care bundle'.

10 High-risk treatment options

Quick info:

Radical prostatectomy:

- involves removal of prostate gland and seminal vesicles [1,2,11]
- should be considered for high-risk patients provided that [2]:
  - the tumour is not fixed to the pelvic wall
  - there is no urethral sphincter invasion

Localised prostate cancer

- there is low tumour volume
- should include extended lymph node dissection (eLND) [2]
- contraindications to nerve-sparing surgery include high-risk factors for extracapsular disease, such as [2]:
  - stage cT3 or cT3C prostate cancer
  - Gleason score greater than 7 on biopsy
  - one or more biopsies of the ipsilateral side greater than 6
- traditionally performed by [1]:
  - open retropubic approach [1,11]:
    - allows better identification of neurovascular bundles [8]
    - one incision required to remove prostate and lymph nodes [8]
  - perineal approach [1,2,11]:
    - less blood loss than with retropubic [8]
    - enables lymph node assessment to take place [2]
    - may increase risk of faecal incontinence compared with retropubic incision [8]
    - may result in positive surgical margin compared with retropubic approach [2]
  - laparoscopic or robotically assisted radical prostatectomy techniques:
    - can reduce the length of stay in hospital, blood loss [1,2], and risk of transfusion [15]
    - may have lower morbidity [2]
    - should not be carried out unless in the context of a clinical trial [3], however, recent practice-based knowledge suggests that these interventions are not being carried out as part of a trial, but that data relating to these interventions is being collated in a registry [4]
    - do not increase the incidence of port-site metastasis [16]
    - have a similar risk of positive margins when compared to retropubic prostatectomy [15]
- neo-adjuvant hormone therapy prior to prostatectomy does not improve overall survival, but does reduce positive margins [17]
- adjuvant radiotherapy following prostatectomy does not improve overall survival, but does improve biochemical progression free survival [18]

External beam radiotherapy:

- is the most common treatment for men diagnosed with prostate cancer, in the UK [1]
- combined with short-term androgen deprivation is recommended [2]
- is indicated for men who do not have a history of inflammatory bowel disease (IBD), such as [11]:
  - Crohn's disease
  - ulcerative colitis
- should be delivered using conformal, image guided techniques [5]
- is usually preceded by hormone therapy [1]
- adjuvant hormonal therapy is recommended for at least 2 years in men receiving radical radiotherapy with a Gleason score of 8 or less [1]
- consider prophylactic irradiation of the pelvic lymph nodes [2]
- combined external beam radiotherapy and high-dose rate brachytherapy gives superior biochemical control and improves overall survival [19]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes in urological cancers. London: NICE; 2002.

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[5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-78.

[8] Map of Medicine (MoM) Clinical Editorial team and Fellows. London: MoM; 2010.

[11] American Urological Association (AUA). Prostate cancer. guidelines for the management of clinically localised prostate cancer: 2007 update. Linthicum, MD: AUA; 2007.

[15] Parsons JK, Bennett JL. Outcomes of retropubic, laparoscopic, and robotic-assisted prostatectomy. Urology 2008; 72: 412-6.

[16] Eng MK, Katz MH, Bernstein AJ et al. Laparoscopic port-site metastasis in urological surgery. J Endourol 2008; 22: 1581-5.

[17] Shelley MD, Kumar S, Wilt T et al. A systematic review and meta-analysis of randomised trials of neo-adjuvant hormone therapy for localised and locally advanced prostate carcinoma. Cancer Treat Rev 2009; 35: 9-17.

[18] Morgan SC, Waldron TS, Eapen L et al. Adjuvant radiotherapy following radical prostatectomy for pathological T3 or margin-positive prostate cancer: a systematic review and meta-analysis. Radiother oncol 2008; 88: 1-9.

[19] Pieters BR, de Back DZ, Koning C et al. Comparison of three radiotherapy modalities of biochemical control and overall survival for the treatment of prostate cancer: a systematic review. Radiother Oncol 2009; 93: 168-73.

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11 Intermediate-risk treatment options

Quick info:

Active surveillance:

- aims to avoid unnecessary treatment in patients with low-risk disease considered suitable for radical treatment [1]
- for low-risk disease patients, gives a 99% disease specific survival at 8 years [5]
- suitable for men with:
  - prostate-specific antigen (PSA) less than 0.15ng/mL/mL [1]
  - Gleason score 3+3 [1]
  - clinical stage T1-T2 [1]
  - cancer in less than 50% of their total number of biopsy cores with any one less than 10mm [1]
  - longer life expectancy, if there are very small areas of cancer in the biopsy or the patient is reluctant to undergo treatment due to potential side-effects [11]
  - life expectancy of less than 10 years due to advanced age or poor health [3]
- if symptoms are progressive or PSA levels rise, the case should be reviewed by a multidisciplinary team (MDT) [3]
- enables risk category to be regularly reassessed via:
  - PSA estimations [1,3]
  - repeat biopsy [1,11]
  - physical examination [11], eg digital rectal examination (DRE) [3]

Radical prostatectomy:

- should be considered for men with intermediate-risk disease [1,2] with a life expectancy of more than 10 years [2,3]
- involves removal of prostate gland and seminal vesicles [1,2,11]
- should include extended lymph node dissection (eLND), if risk of positive lymph nodes exceeds 7% [2]
- traditionally performed by [1]:
  - open retropubic approach [1,11]:
    - allows better identification of neurovascular bundles [8]
    - one incision required to remove prostate and lymph nodes [8]
  - perineal approach [1,2,11]:
    - less blood loss than with retropubic [8]
    - enables lymph node assessment to take place [2]
    - may increase risk of faecal incontinence [8]
    - may result in positive surgical margin [2]
- laparoscopic or robotically assisted radical prostatectomy techniques:
  - can reduce the length of stay in hospital, blood loss [1,2], and risk of transfusion [15]
  - may have lower morbidity [2]
  - should not be carried out unless in the context of a clinical trial [3], however, recent practice-based knowledge suggests that these interventions are not being carried out as part of a trial, but that data relating to these interventions is being collated in a registry [4]
  - do not increase the incidence of port-site metastasis [16]
  - have a similar risk of positive margins when compared to retropubic prostatectomy [15]
- does not always result in complete tumour clearance [6]
- neo-adjuvant hormone therapy prior to prostatectomy does not improve overall survival, but does reduce positive margins [17]

External beam radiotherapy:

- is the most common treatment for men diagnosed with prostate cancer in the UK [1]
- indicated for men who do not have a history of inflammatory bowel disease (IBD), such as [11]:
  - Crohn's disease
  - ulcerative colitis
- should be delivered using conformal [3], image guided techniques [5]
- usually preceded by hormone therapy [1]
- adjuvant hormonal therapy is recommended in men receiving radical radiotherapy; however guidelines differ in the recommended duration of hormone therapy [1,11]:
  - the National Institute for Health and Clinical Excellence (NICE) recommends that hormone therapy should be given for a minimum of 2 years, if the Gleason score is 8 or more [1]
  - the American Urological Association (AUA) recommends that hormone therapy should be given for approximately 6 months for intermediate-risk patients [11]
- combined external beam radiotherapy and high-dose rate brachytherapy gives superior biochemical control and improves overall survival [19]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

Localised prostate cancer

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes for urological cancer. London: NICE; 2002.

[4] Contributors invited by Map of Medicine; 2010.

[6] Prostate cancer risk management programme (PCRMC). Information for primary care: PSA testing in asymptomatic men. London: NHS Cancer Screening Programmes; 2009.

[11] American Urological Association (AUA). Prostate cancer. guidelines for the management of clinically localised prostate cancer: 2007 update. Linthicum, MD: AUA; 2007.

[15] Parsons JK, Bennett JL. Outcomes of retropubic, laparoscopic, and robotic-assisted prostatectomy. Urology 2008; 72: 412-6.

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[17] Shelley MD, Kumar S, Wilt T et al. A systematic review and meta-analysis of randomised trials of neo-adjuvant hormone therapy for localised and locally advanced prostate carcinoma. Cancer Treat Rev 2009; 35: 9-17.

[19] Pieters BR, de Back DZ, Koning C et al. Comparison of three radiotherapy modalities of biochemical control and overall survival for the treatment of prostate cancer: a systematic review. Radiother Oncol 2009; 93: 168-73.

12 Low-risk treatment options

Quick info:

Treatment options for patients with low-risk disease include:

Active surveillance:

- aims to avoid unnecessary treatment in patients with low-risk disease considered suitable for radical treatment [1,2]
- involves regular follow-up by an oncologist and urologist and serial prostate-specific antigen (PSA) testing [6]
- for low-risk disease patients, gives a 99% disease specific survival at 8 years [5]
- suitable for men with:
  - prostate-specific antigen (PSA) less than 0.15ng/mL/mL [1]
  - Gleason score 3+3 [1]
  - clinical stage T1-T2 [1,2]
  - cancer in less than 50% of their total number of biopsy cores with any one less than 10mm [1]
  - longer life expectancy, if there are very small areas of cancer in the biopsy or the patient is reluctant to undergo treatment due to potential side-effects [11]
  - life expectancy of less than 10 years due to advanced age or poor general health [3]
- if symptoms progess or PSA levels rise, the case should be reviewed by a multidisciplinary team (MDT) [3]
- enables risk category to be regularly re-assessed via:
  - PSA estimations [1,3]
  - repeat biopsy [1,11]
  - physical examination [11], eg digital rectal examination (DRE) [3]
- disadvantages – disease may spread locally and advanced disease may develop [6]
- should be stopped and curative treatments should be started if there is evidence of tumour progression [11]

Brachytherapy:

- is a radioactive source (permanently implanted seeds or temporarily implanted wires) implanted into the prostate [1]
- is recommended for patients with [2]:
  - stage cT1b-T2a disease
  - a Gleason score of 6 or less
  - PSA levels 10ng/mL or less
  - 50% or less biopsy cores involved with cancer
  - a prostate volume of 50cm^3 or less
  - a good International Prostatic Symptom Score (IPSS)
- prior to treatment, a transrectal ultrasound (TRUS) should be performed to assess [11]:
  - prostate volume
  - the number of needles, radioactive seeds, the isotope and the isotope strength necessary for treatment
- should be [11]:
  - performed via a transperineal approach
  - guided by a TRUS or magnetic resonance imaging (MRI)
- can be used in combination with external beam radiation (EBRT) in high doses [20]:
  - provided arrangements are made for consent, audit, and clinical governance
  - should involve a multidisciplinary team (MDT)
- temporary adverse effects include:
  - urinary retention [2]

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- need for post-implant transurethral resection of the prostate (TURP) [2]
- incontinence [2]
- urinary frequency, urgency, nocturia, poor stream, and intermittency [8]
- erectile dysfunction [2]

Hormone therapy:

- radical prostatectomy [3]:
  - should be considered for patients with T1c and T2a tumours [2]
  - should be considered for patients with a life expectancy of more than 10 years [3]
  - should be treated by a MDT [3]
  - PSA levels should be monitored [5]
  - salvage radiotherapy should be given if PSA levels rise [5]
- luteinising hormone releasing hormone agonist (LHRHa) [3] – neo-adjuvant hormone therapy prior to prostatectomy does not improve overall survival, but does reduce positive margins [17]

External beam radiotherapy:

- should be delivered using conformal, image guided techniques [3,5]
- combined external beam radiotherapy and high-dose rate brachytherapy gives superior biochemical control and improves overall survival [19]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes for urological cancer. London: NICE; 2002.

[5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-8.

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[17] Shelley MD, Kumar S, Wilt T et al. A systematic review and meta-analysis of randomised trials of neo-adjuvant hormone therapy for localised and locally advanced prostate carcinoma. Cancer Treat Rev 2009; 35: 9-17.

[19] Pieters BR, de Back DZ, Koning C et al. Comparison of three radiotherapy modalities of biochemical control and overall survival for the treatment of prostate cancer: a systematic review. Radiother Oncol 2009; 93: 168-73.

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13 Other treatments

Quick info:

Other treatment options that can be considered for the treatment of localised disease are:

- high-intensity focused ultrasound (HIFU) [11] – experimental technique [2] that should only be used in the context of a clinical trial [1]:
  - causes tissue damage by mechanical and thermal effects [2]
  - should be performed under general or spinal anesthesia [2]
  - complications include [2]:
    - urinary retention
    - impotence
  - recent practice-based knowledge suggests that these interventions are not being carried out as part of a trial, but that data relating to these interventions is being collated in a registry [4]
- cryotherapy [2,11]:
  - should only be used in the context of a clinical trial [1] – selected patients should be fully aware of the efficacy, complications, and low-grade evidence associated with the procedure [17]
  - induces cell death using freezing techniques [2]
  - ideal patients include those who have [2]:
    - organ confined prostate cancer
    - minimal extension beyond the prostate
    - a prostate that is less than 40mL in size

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    - prostate-specific antigen (PSA) levels less than 20ng/mL
    - a Gleason score of 7 or less
  - recent practice-based knowledge suggests that these interventions are not being carried out as part of a trial, but that data relating to these interventions is being collated in a registry [4]
  - complications include:
    - erectile dysfunction [2]
    - incontinence [2]
    - pelvic pain [2]
    - urinary retention [2]
    - tissue sloughing [17]
- radio-frequency interstitial tumour ablation (RITA) – experimental technique [2]
- microwave and electrosurgery – experimental technique [2]
- high-dose interstitial prostate brachytherapy [11]
- combinations of treatments [11]
- intensity modulated radiotherapy (IMRT) – only consider in the context of a clinical trial [2]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[4] Contributors invited by Map of Medicine; 2010.

[11] American Urological Association (AUA). Prostate cancer. guidelines for the management of clinically localised prostate cancer: 2007 update. Linthicum, MD: AUA; 2007.

[17] Shelley M, Wilt T, Coles B et al. Cryotherapy for localised prostate cancer (review). Cochrane Database Syst Rev 2007; CD005010.

14 Long-term follow-up

Quick info:

For all experimental procedures, long-term follow-up is mandatory to assess their role in the management of prostate cancer [2].

Reference:

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

15 Management of adverse effects

Quick info:

Adverse effects include:

- radiation induced enteropathy – should be investigated using flexible sigmoidoscopy to [1]:
  - exclude inflammatory bowel disease (IBD)
  - exclude malignancy of the large bowel
  - ascertain the nature of the radiation injury
- late toxicity associated with brachytherapy, such as [2]:
  - cystitis
  - haematuria
  - urinary stricture
  - urinary incontinence
  - genitourinary toxicity
- sexual dysfunction (associated with all treatments – prior to treatment patients should be warned that treatment can alter sexual experience), such as [1]:
  - loss of libido
  - erectile dysfunction [11]
  - loss of ejaculatory function
  - infertility
  - associated psychological distress
- urinary incontinence [1,11]:
  - patients with urinary symptoms should be offered a urological assessment [1]
  - patients should have access to specialist continence services providing [1]:

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- coping strategies
- pelvic floor muscle re-education
- bladder retraining
- pharmacotherapy

- gastrointestinal toxicity [2,11]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[11] American Urological Association (AUA). Prostate cancer. guidelines for the management of clinically localised prostate cancer: 2007 update. Linthicum, MD: AUA; 2007.

16 Pathohistology of radical prostatectomy

Quick info:

Pathological examination of radical prostatectomy should assess [2]:

- tumour stage
- tumour grade
- surgical margin status
- location and extent of extraprostatic extension
- seminal vesicle location

Reference:

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

17 Follow-up

Quick info:

Follow-up:

- aims to identify local recurrence [1]
- aims to identify and treat complications associated with treatment [1]
- should provide information and address concerns [1]
- should audit outcomes [1]
- should include:
  - physical examination [1]
  - blood tests [1]
  - prostate-specific antigen (PSA) [2]; PSA should be monitored [1]:
    - 6 weeks following treatment
    - every 6 months for the first 2 years following treatment
    - yearly thereafter
  - imaging [1]
  - transrectal ultrasonography (TRUS) and biopsy [2]
  - bone scintigraphy – indicated if PSA levels are elevated [2]
- guideline recommendations differ with regards to digital rectal examination (DRE) as part of routine follow-up:
  - the National Institute for Health and Clinical Excellence (NICE) do not recommend DRE while PSA levels remain at baseline levels [1]
  - the European Association of Urology (EAU) recommend DRE as first-line examination in follow-up after radiotherapy or radical prostatectomy [2]
- if treated with radical radiotherapy, should be offered flexible sigmoidoscopy every 5 years [1]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

Localised prostate cancer

18 Assessment of relapse

Quick info:

Definition of biochemical relapse is different after each radical treatment [1]:

- after radical prostatectomy – prostate-specific antigen (PSA) greater than 0.4ng/mL and rising [2]
- after radical radiotherapy – nadir PSA plus 2ng/mL [2]
- after brachytherapy – nadir PSA plus 2ng/mL

The following factors can differentiate between local and distant relapse [2]:

- timing of PSA increase after surgery
- PSA velocity
- PSA doubling time
- pathohistological stage
- Gleason score

Investigations include [1]:

- biopsy:
  - do not perform in patients who have had a radical prostatectomy
  - should only be performed if the patient is being considered for salvage therapy, if the patient initially received radiotherapy
- magnetic resonance imaging (MRI) of the pelvis
- imaging for the presence of metastatic disease – isotope bone scan

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

19 Ongoing follow-up

Quick info:

Following 2 years of follow-up, men with a stable prostate-specific antigen (PSA) level and with no complications, should be followed up [1]:

- in primary care; or
- by telephone or secure electronic communications

Reference:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

20 Management of biochemical relapse

Quick info:

Biochemical relapse alone should not necessarily prompt a change in treatment:

- prostate-specific antigen (PSA) doubling time should be calculated, based on at least three measurements over a 6 month period [1]

Consider the following treatment options:

- radical radiotherapy if there is no known metastatic disease, if patients has initially been treated with radical prostatectomy [1,2]
- hormone therapy [2], if [1]:
  - symptomatic local disease
  - metastases
  - PSA doubling time is less than 3 months
- high-intensity focused ultrasound (HIFU) and cryotherapy is not recommended other than in the context controlled trials [1]
- expectant management if the disease is localised and the patient is unfit or unwilling to undergo radiation therapy [2]
- observation until the development of metastatic disease [2]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

Localised prostate cancer

IMPORTANT NOTE
Last reviewed refers to the date of completion of the most recent review process for a pathway. All pathways are reviewed regularly every twelve months, and on an ad hoc basis if required.

Localised prostate cancer

Key Dates

Due for review: 31-May-2011
Last reviewed: 29-Jul-2010, by International
Updated: 29-Jul-2010

Accreditations

The pathway is accredited by:

The Chief Knowledge Officer of the NHS:
Accreditation attained: 30-Apr-2010
Due for review: 31-May-2011
Disclaimer

Evidence summary for Localised prostate cancer

This pathway has been developed according to the Map of Medicine editorial methodology (http://mapofmedicine.com/whatisthemap/editorialmethodology). The content of this pathway is based on high-quality guidelines [1-3,5,7,9,11,20,24], critically appraised meta-analyses and systematic reviews [10,12-19,21-23]. Practice-based knowledge has been added by contributors with front-line clinical experience [4,8], including any literature endorsed by the contributor group [6].

Search date: Dec-2009

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This is a list of all the references that have passed critical appraisal for use in the pathway Prostate cancer

ID	Reference
1	National Institute for Health and Clinical Excellence (NICE). Prostate cancer: diagnosis and treatment. Clinical guideline 58. London: NICE; 2008. http://www.nice.org.uk/nicemedia/pdf/CG58FullGuideline.pdf
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3	National Institute for Health and Clinical Excellence (NICE). Improving outcomes in urological cancers. London: NICE; 2002. http://www.nice.org.uk/nicemedia/pdf/Urological_Manual.pdf
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20 National Institute for Health and Clinical Excellence (NICE). High dose rate brachytherapy in combination with external-beam radiotherapy for localised prostate cancer. London: NICE; 2006. http://www.nice.org.uk/nicemedia/pdf/IPG174guidance.pdf

21 Boustead G, Edwards SJ. Systematic review of early vs deferred hormonal treatment of locally advanced prostate cancer: a meta-analysis of randomized controlled trials. BJU Int 2007; 99: 1383-9. http://www.ncbi.nlm.nih.gov/pubmed/17346269

22 Taylor LG, Canfield SE, Du XL. Review of major adverse effects of androgen-deprivation therapy in men with prostate cancer. Cancer 2009; 115: 2388-99. http://www.ncbi.nlm.nih.gov/pubmed/19399748

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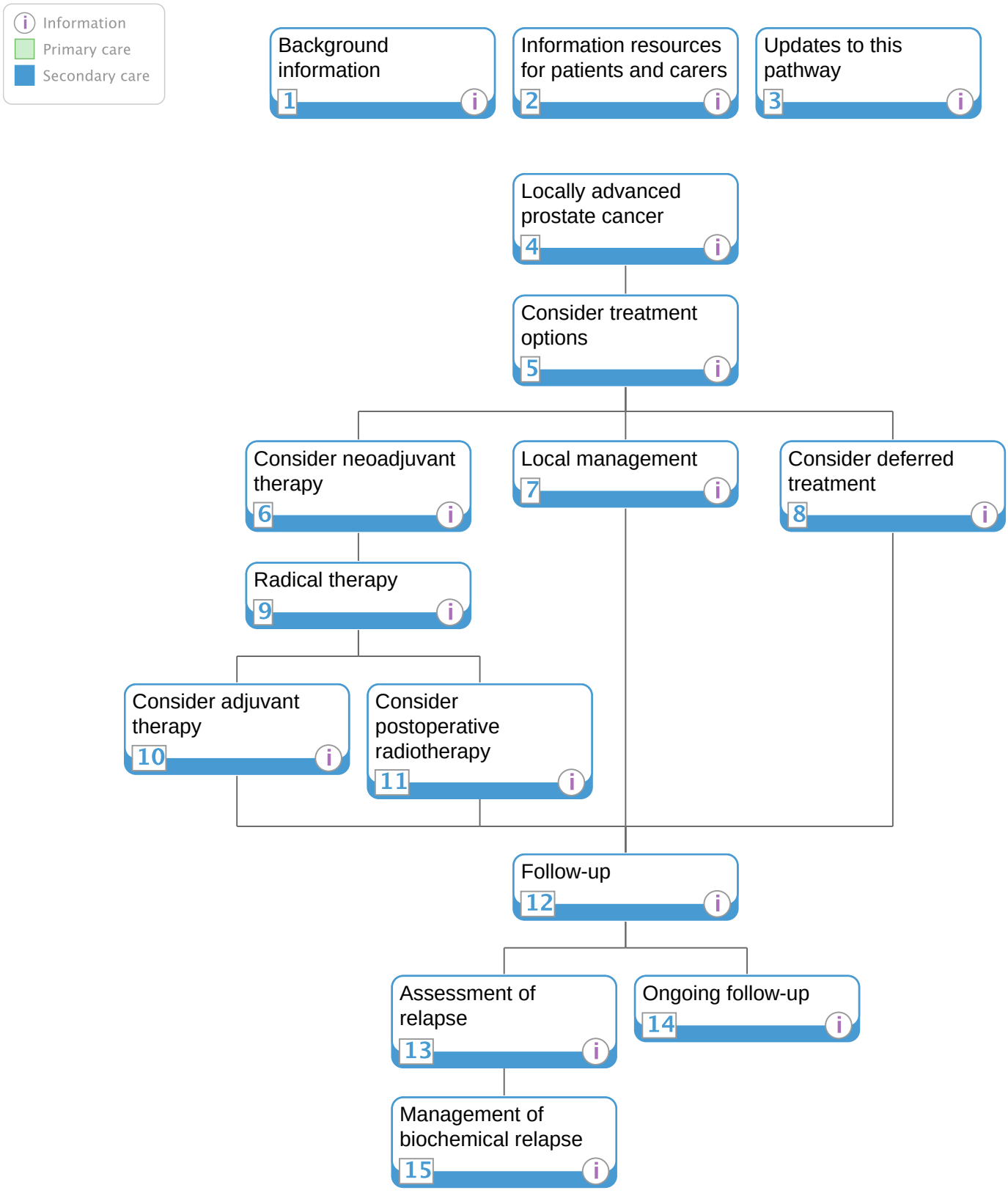
24 National Institute for Health and Clinical Excellence. Docetaxel for the treatment of hormone refractory prostate cancer. National Institute for Health and Clinical Excellence 2006; http://www.nice.org.uk/nicemedia/pdf/TA101guidance.pdf

Disclaimers

Locally advanced prostate cancer



Last reviewed: 29-Jul-2010 Due for review: 31-May-2011 Printed on: 05-Aug-2010

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Locally advanced prostate cancer

1 Background information

Quick info:

Scope:

- diagnosis, staging, and management of prostate cancer
- includes primary and secondary care
- includes follow-up, management of relapse, and management of advanced disease

Out of scope:

- palliative care (see 'Palliative care' pathway)
- screening and detection
- management and treatment related to erectile dysfunction (see 'Erectile dysfunction' pathway)

Definition:

- localised prostate cancer – cancer confined within the prostate capsule
- locally advanced prostate cancer – cancer extended outside the prostate capsule

Incidence and prevalence:

- in England and Wales, prostate cancer is the most common cancer in males [1]
- prostate cancer is the second most common cause of death in men [2]
- 3% of men die as a consequence of prostate cancer [1]
- in England and Wales, 1% of all men aged 85 and over are diagnosed with cancer every year [1]
- in Europe, the incidence rate is 214 cases per 1000 men [2]
- 25% of patients have advanced disease at the time of diagnosis [3]

Risk factors:

- hormones, eg high levels of testosterone and insulin-like growth factor (IGF-1)
- increasing age
- family history – risk of disease doubles if one first-line relative has had prostate cancer
- family history of breast cancer
- ethnic origin
- aetiology:
  - diet, eg increased risk is associated with diets high in fat
  - alcohol consumption
  - ultraviolet (UV) exposure
  - occupational exposure

Classification:

- tumour staging guides decisions regarding treatment, and is based on the tumour node metastasis (TNM) classification [EAU]:
  - T2 – tumour confined within the prostate
  - T3 – tumour extends through the prostate capsule
  - T4 – tumour is fixed or invades adjacent structure, ie bladder neck, external sphincter, rectum
  - N – regional lymph nodes
  - M – distant metastasis

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes in urological cancers. London: NICE; 2002.

[4] Contributors invited by Map of Medicine; 2010.

[5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-8.

[6] Prostate cancer risk management programme (PCRMC). Information for primary care: PSA testing in asymptomatic men. London: NHS Cancer Screening Programmes; 2009

2 Information resources for patients and carers

Quick info:

Patients and carers in England and Wales can access this pathway through NHS Choices at http://healthguides.mapofmedicine.com/choices/map/prostate_cancer1.html

Locally advanced prostate cancer

The following resources have been produced by organisations certified by The Information Standard:

- 'Prostate cancer' (URL) from Bupa at http://www.bupa.co.uk/
- 'Prostate cancer' (URL) from Cancer Research UK at http://www.cancerresearchuk.org/
- 'Prostate cancer' (URL) from Datapharm at http://www.medguides.medicines.org.uk
- 'Prostate cancer' (URL) from Macmillan Cancer Support at http://www.macmillan.org.uk
- 'Understanding NICE guidance: Prostate cancer' (PDF) from National Institute for Health and Clinical Excellence (NICE) at http://www.nice.org.uk
- 'Prostate cancer' (PDF) from Patient UK at http://www.patient.co.uk
- 'Information' (URL) from The Prostate Cancer Charity at http://www.prostate-cancer.org.uk

The following resources have been written or recommended by national policy bodies or guideline producers whose content has informed this pathway:

- 'Cancer of the prostate' (URL) from Clinical Knowledge Summaries (CKS) at http://www.cks.nhs.uk

Information for carers and people with disabilities is available at:

- 'Caring for someone' (URL) from Directgov at http://www.direct.gov.uk
- 'Disabled people' (URL) from Directgov at http://www.direct.gov.uk

Explanations of clinical laboratory tests used in diagnosis and treatment are available at ‘Understanding Your Tests’ (URL) from Lab Tests Online-UK at http://www.labtestsonline.org.uk

The Map of Medicine is committed to providing high quality health and social care information for patients and carers. For details on how these resources are identified, please see 'Map of Medicine Patient and Carer Information'.

NB: This information appears on each page of this pathway.

3 Updates to this pathway

Quick info:

Date of publication: 30-Jul-2010

Interim update: A link to a ‘care bundle’ (based upon the NHS High Impact Interventions) has been included to reduce the risk of healthcare associated infections at relevant points along the patient journey.

Date of publication: 29-Apr-2010

Three nodes now appear at the top of each pathway page. These provide:

- easy access to scope and background information on each page of the pathway whilst reducing repetition between nodes
- easy access to patient resources/leaflets
- information on pathway updates

This pathway has been updated in line with the following guidelines:

- [1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.
- [2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.
- [3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes in urological cancers. London: NICE; 2002.
- [5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-78.
- [7] Clinical Knowledge Summaries (CKS). Urological cancer - suspected. Newcastle upon Tyne: CKS; 2009.
- [9] National Institute for Health and Clinical Excellence (NICE). Referral guidelines for suspected cancer. Clinical guideline 27. London: NICE; 2005.
- [11] American Urological Association (AUA). Prostate cancer. Guidelines for the management of clinically localised prostate cancer: 2007 update. Linthicum, MD: AUA; 2007.
- [20] National Institute for Health and Clinical Excellence (NICE). High dose rate brachytherapy in combination with external-beam radiotherapy for localised prostate cancer. Interventional procedure guidance 174. London: NICE; 2006.
- [24] National Institute for Health and Clinical Excellence (NICE). Docetaxal for the treatment of hormone refractory prostate cancer. Technology appraisal guidance 101. London: NICE; 2006.

Further information was provided by the following references: [4,6,8,10,12-19,21-23]. For more information, please see the pathway's Provenance certificate.

Practice-based knowledge has been contributed to this pathway by:

- Dr Frank Chinegwundoh: Consultant Urological Surgeon, Bart’s and the London NHS Trust, London, UK
- Mr George Fowlis: Consultant Urological Surgeon, North Middlesex University Hospital, Middlesex, UK
- Selected members of Map of Medicine (MoM) Clinical Editorial team and Fellows board

The pathway has been completely restructured and redrafted in line with the Map of Medicine's editorial methodology and to bring it in line with current clinical practice.

Locally advanced prostate cancer

NB: This information appears on each page of this pathway.

4 Locally advanced prostate cancer

Quick info:

Locally advanced disease covers the following spectrum [1]:

- from pT3a disease, where there is spread through the prostate capsule, to T4 cancer disease, where tumour invades the bladder or rectum and pelvic lymph nodes
- those with localised disease, but with a high risk of extracapsular disease, such as:
  - Gleason score of 8 or greater
  - prostate-specific antigen (PSA) level greater than 20

Reference:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

5 Consider treatment options

Quick info:

Discuss treatment options, including side-effects, with patient [1]:

- radiotherapy plus hormone therapy:
  - consider pelvic radiotherapy for those who will receive radiotherapy plus hormone therapy, and who have more than 15% risk of pelvic lymph node involvement
  - hormone therapy for 3 months prior to starting radiotherapy and usually continues for 2 years after
- hormone therapy alone

Reference:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer - diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

6 Consider neoadjuvant therapy

Quick info:

Neoadjuvant hormone therapy:

- early intervention lowers overall mortality and overall disease progression compared with deferred hormone therapy [21]
- should be offered to men at high-risk of disease progression and cancer-related death [21]
- can be given for several months before radical radiotherapy to reduce the size of the prostate [1]
- benefits include [1]:
  - reduced side-effect due to smaller radiation field used
  - increased cell killing effects of radiation
- can be used to downstage the tumour prior to radical prostatectomy [1,2]
- prior to prostatectomy does not improve overall survival, but does reduce positive margins [17]
- through using hormone manipulation:
  - androgen withdrawal via [1,5]:
    - luteinising hormone-releasing hormone agonist (LHRHa)
    - bilateral orchidectomy
  - androgen receptor blockade (anti-androgens) [1,5]
  - bicalutamide monotherapy [1] – patients should be given breast bud irradiation to prevent gynaecomastia [5]
  - side-effects of androgen deprivation include [22]:
    - elevations in risk of diabetes
    - skeletal fractures
    - cardiovascular-related mortality
- can be combined with external beam irradiation [3] with the aim of [2]:
  - reducing the risk of metastases by sterilising micrometastases
  - decreasing the risk of local recurrence
- recommendations regarding duration of treatment with radical radiotherapy and LHRHa therapy differs between guidelines:
  - The National Institute for Health and Clinical Excellence recommends that patients receiving radical radiotherapy should also receive neoadjuvant and concurrent LHRHa therapy for 3 to 6 [1]

Locally advanced prostate cancer

- The European Society for Medical Oncology recommends that patients receiving external beam radiotherapy should also receive LHRHa therapy for at least 6 months [5]
- consider pelvic radiotherapy for those who will receive radiotherapy plus hormone therapy, and who have more than 15% risk of pelvic lymph node involvement [1]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes for urological cancer. London: NICE; 2002.

[5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-8.

[17] Shelley MD, Kumar S, Wilt T et al. A systematic review and meta-analysis of randomised trials of neo-adjuvant hormone therapy for localised and locally advanced prostate carcinoma. Cancer Treat Rev 2009; 35: 9-17.

[21] Boustead G, Edwards SJ. Systematic review of early vs deferred hormonal treatment for locally advanced prostate cancer: a meta-analysis of randomised controlled trials. BJU Int 2007; 99: 1383-9.

[22] Taylor LG, Canfield SE, Du XL. Review of major adverse effects of androgen-deprivation therapy in men with prostate cancer. Cancer 2009; 115: 2388-99.

7 Local management

Quick info:

Local management includes:

- pelvic radiotherapy – consider for men who have a greater than 15% risk of pelvic lymph node involvement who are to receive neoadjuvant hormone therapy and radical radiotherapy [1]
- brachytherapy boost:
  - can be combined with external beam radiotherapy [1]
  - combined external beam radiotherapy and high-dose rate brachytherapy gives superior biochemical control and improves overall survival [19]
- high intensity focused ultrasound (HIFU) and cryotherapy – only recommended in the context of controlled clinical trials [1]:
  - however, recent practice-based knowledge suggests that these interventions are not being carried out as part of a trial, but that data relating to these interventions is being collated in a registry [4]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[4] Contributors invited by Map of Medicine; 2010.

[19] Pieters BR, de Back DZ, Koning C et al. Comparison of three radiotherapy modalities of biochemical control and overall survival for the treatment of prostate cancer: a systematic review. Radiother Oncol 2009; 93: 168-73.

8 Consider deferred treatment

Quick info:

If disease progresses after deferred treatment, consider hormone therapy [2].

Reference:

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

9 Radical therapy

Quick info:

Some patients with stage T3 cancer can be treated with radical prostatectomy, however T3 disease is usually a contraindication for radical surgery [1].

Radical prostatectomy:

- involves removal of prostate gland and seminal vesicles [1,2,11]
- should include extended lymph node dissection (eLND) if risk of positive lymph nodes exceeds 7% [2]

Locally advanced prostate cancer

- can be nerve-sparing or non-nerve sparing depending on patient's sexual function and tumour characteristics [11]
- traditionally performed by [1]:
  - open retropubic approach [1,11]:
    - allows better identification of neurovascular bundles [8]
    - one incision required to remove prostate and lymph nodes [8]
  - perineal approach [1,2,11]:
    - less blood loss than with retropubic [8]
    - enables lymph node assessment to take place [2]
    - may increase risk of faecal incontinence compared with retropubic incision [8]
    - may result in positive surgical margin compared with retropubic approach [2]
  - laparoscopic or robotically assisted radical prostatectomy techniques:
    - can reduce the length of stay in hospital, blood loss [1,2], and risk of transfusion [15]
    - may have lower morbidity [2]
    - should not be carried out unless in the context of a clinical trial [3], however, recent practice-based knowledge suggests that these interventions are not being carried out as part of a trial, but that data relating to these interventions is being collated in a registry [4]
    - does not enhance the incidence of port-site metastasis [16]
    - have a similar risk of positive margins when compared to retropubic prostatectomy [15]
- risk factors and complications include:
  - incontinence [1,2]
  - urethral stricture, obstruction [2]
  - bladder neck obstruction [2]
  - erectile dysfunction [1,2]
  - retrograde ejaculation [8]
  - rectal injury [2]
  - lymphocele [2]
  - major bleeding [2]
  - pulmonary embolism [2]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes for urological cancer. London: NICE; 2002.

[4] Contributors invited by Map of Medicine; 2010.

[8] Map of Medicine (MoM) Clinical Editorial team and Fellows. London: MoM; 2010.

[11] American Urological Association (AUA). Prostate cancer. Guidelines for the management of clinically localised prostate cancer: 2007 update. Linthicum, MD: AUA; 2007.

[15] Parsons JK, Bennett JL. Outcomes of retropubic, laparoscopic, and robotic-assisted prostatectomy. Urology 2008; 72: 412-6.

[16] Eng MK, Katz MH, Bernstein AJ et al. Laparoscopic port-site metastasis in urological surgery. J Endourol 2008; 22: 1581-5.

10 Consider adjuvant therapy

Quick info:

Adjuvant hormone therapy is:

- not recommended in addition to radical prostatectomy, unless in the context of a clinical trial [1]:
  - a recent systematic review and meta-analysis demonstrates significant benefits of adjuvant hormone therapy, including increased overall survival and disease free survival [23]
- recommended for at least 2 years in patients receiving radical radiotherapy with a Gleason score of 8 or higher [1]

Other adjuvant therapies include [1]:

- bisphosphonates:
  - not recommended for the prevention of bone metastases
  - used to treat osteoporosis (side-effect of androgen withdrawal therapy)
- cox-2 inhibitors – currently being investigated as adjuvant therapy

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

Locally advanced prostate cancer

[23] Shelley MD, Kumar S, Coles B et al. Adjuvant hormone therapy for localised and locally advanced prostate carcinoma: a systematic review and meta-analysis of randomised trials. Cancer Treat Rev 2009; 35: 540-6.

11 Consider postoperative radiotherapy

Quick info:

Immediate postoperative radiotherapy is only recommended in the context of a clinical trial [1]; however, a recent systematic review and meta-analysis shows that adjuvant radiotherapy improves biochemical progression free survival [18].

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[18] Morgan S, Waldron TS, Eapen L et al. Adjuvant radiotherapy following radical prostatectomy for pathological T3 or margin-positive prostate cancer: a systematic review and meta-analysis. Radiother Oncol 2008: 88: 1-9.

12 Follow-up

Quick info:

Follow-up:

- aims to identify local recurrence [1]
- aims to identify and treat complications associated with treatment [1]
- should provide information and address concerns [1]
- should audit outcomes [1]
- should include:
  - physical examination [1]
  - blood tests [1]
  - prostate-specific antigen (PSA) [2]; PSA should be monitored [1]:
    - 6 weeks following treatment
    - every 6 months for the first 2 years following treatment
    - yearly thereafter
  - imaging [1]
  - transrectal ultrasonography (TRUS) and biopsy [2]
  - bone scintigraphy – indicated if PSA levels are elevated [2]
- guideline recommendations differ with regards to digital rectal examination (DRE) as part of routine follow-up:
  - the National Institute for Health and Clinical Excellence do not recommend DRE while PSA levels remain at baseline levels [1]
  - the European Association of Urology recommend DRE as first-line examination in follow-up after radiotherapy or radical prostatectomy [2]
- if treated with radical radiotherapy, should be offered flexible sigmoidoscopy every 5 years [1]

Follow-up after hormone treatment:

- monitor response to treatment [2]
- monitor compliance [2]
- detect complications [2]
- monitor serum PSA levels [2]
- monitor creatinine, haemoglobin, and liver function [2]:
  - creatinine can detect upper urinary tract obstruction
  - haemoglobin and liver function tests can indicate disease progression or toxicity to treatment

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

13 Assessment of relapse

Quick info:

Definition of biochemical relapse is different after each radical treatment [1]:

Locally advanced prostate cancer

- after radical prostatectomy – prostate-specific antigen (PSA) greater than 0.4ng/mL and rising [2]
- after radical radiotherapy – nadir PSA plus 2ng/mL [2]
- after brachytherapy – nadir PSA plus 2ng/mL

The following factors can differentiate between local and distant relapse [2]:

- timing of PSA increase after surgery
- PSA velocity
- PSA doubling time
- pathohistological stage
- Gleason score

Investigations include [1]:

- biopsy:
  - do not perform in patients who have had a radical prostatectomy
  - should only be performed if the patient is being considered for salvage therapy, if the patient has initially received radiotherapy
- magnetic resonance imaging (MRI) of the pelvis
- imaging for the presence of metastatic disease – isotope bone scan

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

14 Ongoing follow-up

Quick info:

Following 2 years of follow-up, men with a stable prostate-specific antigen (PSA) level and with no complications, should be followed up [1]:

- in primary care; or
- by telephone or secure electronic communications

Reference:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

15 Management of biochemical relapse

Quick info:

Biochemical relapse alone should not necessarily prompt a change in treatment:

- prostate-specific antigen (PSA) doubling time should be calculated, based on at least three measurements over a 6 month period [1]

Consider the following treatment options:

- radical radiotherapy if there is no known metastatic disease, if patient has initially been treated with radical prostatectomy [1,2]
- hormone therapy [2], if [1]:
  - symptomatic local disease
  - metastases
  - PSA doubling time is less than 3 months
- high-intensity focused ultrasound (HIFU) and cryotherapy is not recommended other than in the context controlled trials [1]
- expectant management if the disease is localised and the patient is unfit or unwilling to undergo radiation therapy [2]
- observation until the development of metastatic disease [2]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

Locally advanced prostate cancer

Key Dates

Due for review: 31-May-2011
Last reviewed: 29-Jul-2010, by International
Updated: 29-Jul-2010

Accreditations

The pathway is accredited by:

The Chief Knowledge Officer of the NHS:
Accreditation attained: 30-Apr-2010
Due for review: 31-May-2011
Disclaimer

Evidence summary for Locally advanced prostate cancer

This pathway has been developed according to the Map of Medicine editorial methodology (http://mapofmedicine.com/whatisthemap/editorialmethodology). The content of this pathway is based on high-quality guidelines [1-3,5,7,9,11,20,24], critically appraised meta-analyses and systematic reviews [10,12-19,21-23]. Practice-based knowledge has been added by contributors with front-line clinical experience [4,8], including any literature endorsed by the contributor group [6].

Search date: Dec-2009

References

This is a list of all the references that have passed critical appraisal for use in the pathway Prostate cancer

ID	Reference
1	National Institute for Health and Clinical Excellence (NICE). Prostate cancer: diagnosis and treatment. Clinical guideline 58. London: NICE; 2008. http://www.nice.org.uk/nicemedia/pdf/CG58FullGuideline.pdf
2	Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. The Netherlands: European Association of Urology (EAU); 2009. http://www.uroweb.org/fileadmin/tx_eauguidelines/2009/Full/Prostate_Cancer.pdf
3	National Institute for Health and Clinical Excellence (NICE). Improving outcomes in urological cancers. London: NICE; 2002. http://www.nice.org.uk/nicemedia/pdf/Urological_Manual.pdf
4	Contributors invited by Map of Medicine. 2010.
5	Horwich A, Parker C, Kataja V. Prostate cancer: ESMO Clinical Recommendations for diagnosis, treatment and follow-up. Ann Oncol 2009; 18: iv76-8. http://www.ncbi.nlm.nih.gov/pubmed/19454471
6	Prostate Cancer Risk Management Programme (PCRMP). Information for primary care: PSA testing in asymptomatic men. London: NHS Screening Programmes; 2009. http://www.cancerscreening.nhs.uk/prostate/prostate-booklet-text.pdf
7	Clinical Knowledge Summaries (CKS). Urological cancer - suspected. Newcastle Upon Tyne: CKS; 2009. http://www.cks.nhs.uk/urological_cancer_suspected/management/quick_answers/scenario_urological_cancer_suspected/prostate_cancer
8	Map of Medicine (MoM). London: MoM; 2010.
9	National Institute for Health and Clinical Excellence (NICE). Referral guidelines for suspected cancer. London: NICE; 2005. http://www.nice.org.uk/nicemedia/pdf/cg027niceguideline.pdf
10	Wallace TJ, Anscher MS. Prostate cancer. BMJ Best Practice; 2010. http://bestpractice.bmj.com/best-practice/monograph/254.html
11	American Urological Association (AUA). Prostate cancer: guideline for the management of clinically localised prostate cancer. 2007 update. Linthicum, MD: AUA; 2007. http://www.auanet.org/content/guidelines-and-quality-care/clinical-guidelines/main-reports/proscan07/content.pdf
12	Scattoni V, Zlotta A, Montironi R. Extended and saturation prostatic biopsy in the diagnosis and characterisation of prostate cancer: a critical analysis of the literature. Eur Urol 2007; 52: 1309-22. http://www.ncbi.nlm.nih.gov/pubmed/17720304
13	Hovels AM, Heesakkers RA, Adang EM. The diagnostic accuracy of CT and MRI in the staging of pelvic lymph nodes in patients with prostate cancer: a meta-analysis. Clin Radiol 2008; 63: 387-95. http://www.ncbi.nlm.nih.gov/pubmed/18325358

IMPORTANT NOTE
Last reviewed refers to the date of completion of the most recent review process for a pathway. All pathways are reviewed regularly every twelve months, and on an ad hoc basis if required.

Locally advanced prostate cancer

ID Reference

14 Cohen MS, Hanley RS, Kurteva T et al. Comparing the Gleason prostate biopsy and Gleason prostatectomy grading system: the Lahey Clinic Medical Center experience and an international meta-analysis. Eur Urol 2008; 54: 371-381. http://www.ncbi.nlm.nih.gov/pubmed/18395322

15 Parsons JK, Bennett JL. Outcomes of retropubic, laparoscopic, and robotic-assisted prostatectomy. Urology 2008; 72: 412-6. http://www.ncbi.nlm.nih.gov/pubmed/18267330

16 Eng MK, Katz MH, Bernstein AJ et al. Laparoscopic port-site metastasis in urologic surgery. J Endourol 2008; 22: 1581-5. http://www.ncbi.nlm.nih.gov/pubmed/18620507

17 Shelley MD, Kumar S, Wilt T et al. A systematic review and meta-analysis of randomised trials of neo-adjuvant hormone therapy for localised and locally advanced prostate carcinoma. Cancer Treat Rev 2009; 35: 9-17. http://www.ncbi.nlm.nih.gov/pubmed/18926640

18 Morgan SC, Waldron TS, Eapen L et al. Adjuvant radiotherapy following radical prostatectomy for pathologic T3 or margin-positive prostate cancer: a systematic review and meta-analysis. Radiother Oncol 2008; 88: 1-9. http://www.ncbi.nlm.nih.gov/pubmed/18501455

19 Pieters BR, de Back DZ, Koning C et al. Comparison of three radiotherapy modalities on biochemical control and overall survival for the treatment of prostate cancer: a systematic review. Radiother Oncol 2009; 93: 168-173. http://www.ncbi.nlm.nih.gov/pubmed/19748692

20 National Institute for Health and Clinical Excellence (NICE). High dose rate brachytherapy in combination with external-beam radiotherapy for localised prostate cancer. London: NICE; 2006. http://www.nice.org.uk/nicemedia/pdf/IPG174guidance.pdf

21 Boustead G, Edwards SJ. Systematic review of early vs deferred hormonal treatment of locally advanced prostate cancer: a meta-analysis of randomized controlled trials. BJU Int 2007; 99: 1383-9. http://www.ncbi.nlm.nih.gov/pubmed/17346269

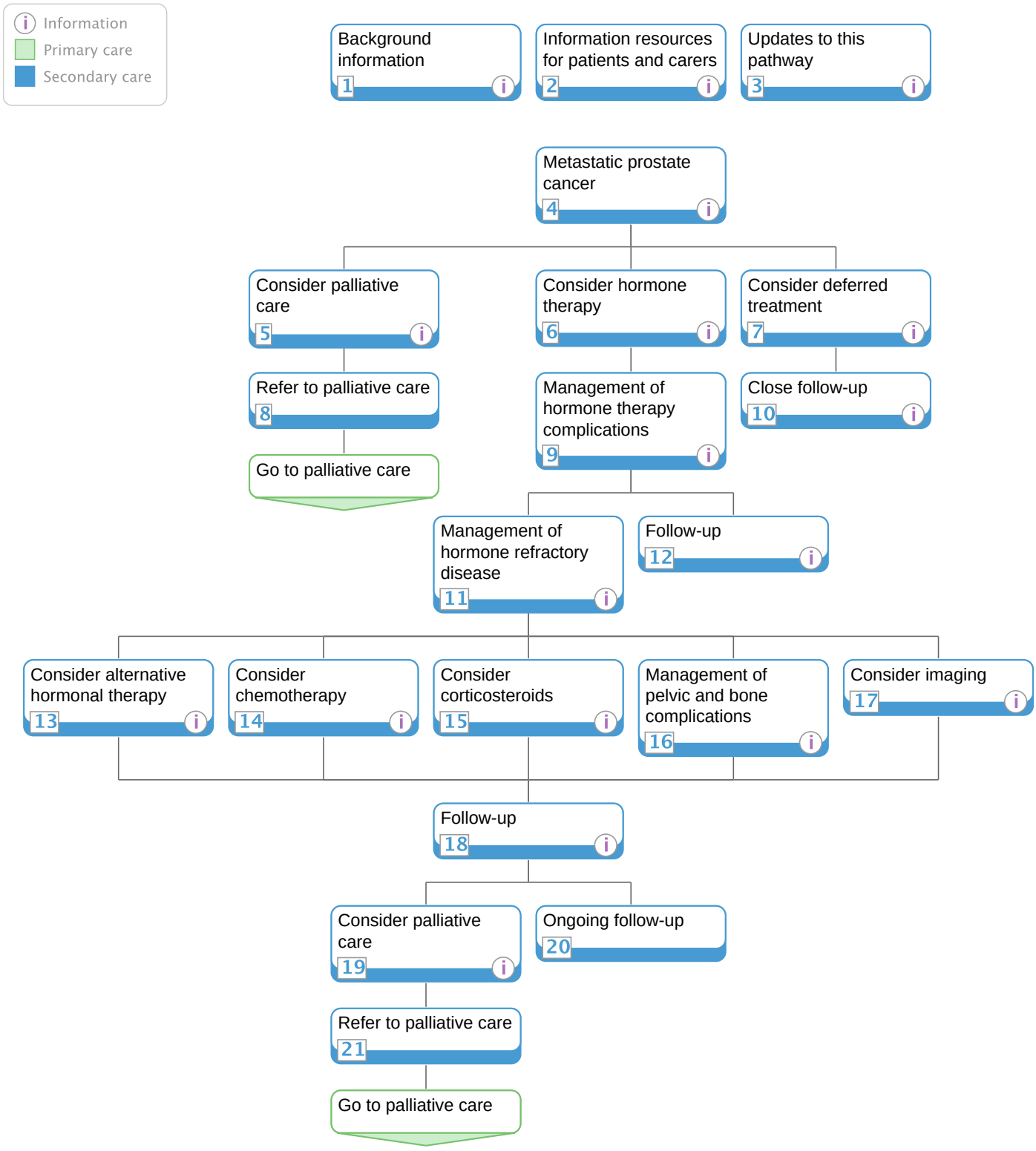
22 Taylor LG, Canfield SE, Du XL. Review of major adverse effects of androgen-deprivation therapy in men with prostate cancer. Cancer 2009; 115: 2388-99. http://www.ncbi.nlm.nih.gov/pubmed/19399748

23 Shelley MD, Kumar S, Coles B et al. Adjuvant hormone therapy for localised and locally advanced prostate carcinoma: a systematic review and meta-analysis of randomised trials. Cancer Treat Rev 2009; 35: 540-6. http://www.ncbi.nlm.nih.gov/pubmed/19493624

24 National Institute for Health and Clinical Excellence. Docetaxel for the treatment of hormone refractory prostate cancer. National Institute for Health and Clinical Excellence 2006; http://www.nice.org.uk/nicemedia/pdf/TA101guidance.pdf

Disclaimers

Metastatic prostatic disease



Last reviewed: 29-Jul-2010 Due for review: 31-May-2011 Printed on: 05-Aug-2010

IMPORTANT NOTE
Last reviewed refers to the date of completion of the most recent review process for a pathway. All pathways are reviewed regularly every twelve months, and on an ad hoc basis if required.

Metastatic prostatic disease

1 Background information

Quick info:

Scope:

- diagnosis, staging, and management of prostate cancer
- includes primary and secondary care
- includes follow-up, management of relapse, and management of advanced disease

Out of scope:

- palliative care (see 'Palliative care' pathway)
- screening and detection
- management and treatment related to erectile dysfunction (see 'Erectile dysfunction' pathway)

Definition:

- localised prostate cancer – cancer confined within the prostate capsule
- locally advanced prostate cancer – cancer extended outside the prostate capsule

Incidence and prevalence:

- in England and Wales, prostate cancer is the most common cancer in males [1]
- prostate cancer is the second most common cause of death in men [2]
- 3% of men die as a consequence of prostate cancer [1]
- in England and Wales, 1% of all men aged 85 and over are diagnosed with cancer every year [1]
- in Europe, the incidence rate is 214 cases per 1000 men [2]
- 25% of patients have advanced disease at the time of diagnosis [3]

Risk factors:

- hormones, eg high levels of testosterone and insulin-like growth factor (IGF-1)
- increasing age
- family history – risk of disease doubles if one first-line relative has had prostate cancer
- family history of breast cancer
- ethnic origin
- aetiology:
  - diet, eg increased risk is associated with diets high in fat
  - alcohol consumption
  - ultraviolet (UV) exposure
  - occupational exposure

Classification:

- tumour staging guides decisions regarding treatment ,and is based on the tumour node metastasis (TNM) classification [EAU]:
  - T2 – tumour confined within the prostate
  - T3 – tumour extends through the prostate capsule
  - T4 – tumour is fixed or invades adjacent structure, ie bladder neck, external sphincter, rectum
  - N – regional lymph nodes
  - M – distant metastasis

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes for urological cancer. London: NICE; 2002.

[4] Contributors invited by Map of Medicine; 2010.

[5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-78.

[6] Prostate cancer risk management programme (PCRMC). Information for primary care: PSA testing in asymptomatic men. London: NHS Cancer Screening Programmes; 2009.

2 Information resources for patients and carers

Quick info:

Patients and carers in England and Wales can access this pathway through NHS Choices at http://healthguides.mapofmedicine.com/choices/map/prostate_cancer1.html

Metastatic prostatic disease

The following resources have been produced by organisations certified by The Information Standard:

- 'Prostate cancer' (URL) from Bupa at http://www.bupa.co.uk/
- 'Prostate cancer' (URL) from Cancer Research UK at http://www.cancerresearchuk.org/
- 'Prostate cancer' (URL) from Datapharm at http://www.medguides.medicines.org.uk
- 'Prostate cancer' (URL) from Macmillan Cancer Support at http://www.macmillan.org.uk
- 'Understanding NICE guidance: Prostate cancer' (PDF) from National Institute for Health and Clinical Excellence (NICE) at http://www.nice.org.uk
- 'Prostate cancer' (PDF) from Patient UK at http://www.patient.co.uk
- 'Information' (URL) from The Prostate Cancer Charity at http://www.prostate-cancer.org.uk

The following resources have been written or recommended by national policy bodies or guideline producers whose content has informed this pathway:

- 'Cancer of the prostate' (URL) from Clinical Knowledge Summaries (CKS) at http://www.cks.nhs.uk

Information for carers and people with disabilities is available at:

- 'Caring for someone' (URL) from Directgov at http://www.direct.gov.uk
- 'Disabled people' (URL) from Directgov at http://www.direct.gov.uk

Explanations of clinical laboratory tests used in diagnosis and treatment are available at ‘Understanding Your Tests’ (URL) from Lab Tests Online-UK at http://www.labtestsonline.org.uk

The Map of Medicine is committed to providing high quality health and social care information for patients and carers. For details on how these resources are identified, please see 'Map of Medicine Patient and Carer Information'.

NB: This information appears on each page of this pathway.

3 Updates to this pathway

Quick info:

Date of publication: 30-Jul-2010

Interim update: A link to a ‘care bundle’ (based upon the NHS High Impact Interventions) has been included to reduce the risk of healthcare associated infections at relevant points along the patient journey.

Date of publication: 29-Apr-2010

Three nodes now appear at the top of each pathway page. These provide:

- easy access to scope and background information on each page of the pathway whilst reducing repetition between nodes
- easy access to patient resources/leaflets
- information on pathway updates

This pathway has been updated in line with the following guidelines:

- [1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.
- [2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.
- [3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes in urological cancers. London: NICE; 2002.
- [5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-78.
- [7] Clinical Knowledge Summaries (CKS). Urological cancer - suspected. Newcastle upon Tyne: CKS; 2009.
- [9] National Institute for Health and Clinical Excellence (NICE). Referral guidelines for suspected cancer. Clinical guideline 27. London: NICE; 2005.
- [11] American Urological Association (AUA). Prostate cancer. Guidelines for the management of clinically localised prostate cancer: 2007 update. Linthicum, MD: AUA; 2007.
- [20] National Institute for Health and Clinical Excellence (NICE). High dose rate brachytherapy in combination with external-beam radiotherapy for localised prostate cancer. Interventional procedure guidance 174. London: NICE; 2006.
- [24] National Institute for Health and Clinical Excellence (NICE). Docetaxal for the treatment of hormone refractory prostate cancer. Technology appraisal guidance 101. London: NICE; 2006.

Further information was provided by the following references: [4,6,8,10,12-19,21-23]. For more information, please see the pathway's Provenance certificate.

Practice-based knowledge has been contributed to this pathway by:

- Dr Frank Chinegwundoh: Consultant Urological Surgeon, Bart’s and the London NHS Trust, London, UK
- Mr George Fowlis: Consultant Urological Surgeon, North Middlesex University Hospital, Middlesex, UK
- Selected members of Map of Medicine (MoM) Clinical Editorial team and Fellows board

The pathway has been completely restructured and redrafted in line with the Map of Medicine's editorial methodology and to bring it in line with current clinical practice.

IMPORTANT NOTE
Last reviewed refers to the date of completion of the most recent review process for a pathway. All pathways are reviewed regularly every twelve months, and on an ad hoc basis if required.

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NB: This information appears on each page of this pathway.

4 Metastatic prostate cancer

Quick info:

Metastatic disease is defined as prostate cancer that has spread beyond the prostate and pelvic lymph nodes [1].

Reference:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

5 Consider palliative care

Quick info:

Palliative care should:

- manage pain and other symptoms [1]
- provide provisions for psychological, social, and spiritual support [1]
- achieve the best quality of care for the patient and family [1]
- should involve primary care services, but there should be close co-operation with the multidisciplinary team (MDT) and specialist palliative care staff [1]
- ensure patient's transitions between care settings are smooth [8]
- provide tailored information [8]
- involve regular assessment of disease [8]
- take into account personal preferences [1]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[8] Map of Medicine (MoM) Clinical Editorial team and Fellows. London: MoM; 2010.

6 Consider hormone therapy

Quick info:

Hormone therapy:

- consider [1,3,5]:
  - bilateral orchidectomy [2]; or
  - luteinising hormone-releasing hormone agonist (LHRHa)
- should not be deferred if there is a risk of spinal cord decompression [3]
- bilateral orchidectomy:
  - all patients with metastatic disease should be offered bilateral orchidectomy as an alternative to continuous LHRHa [1]
  - side-effects include [8]:
    - erectile dysfunction, hot flushes, and loss of libido
    - tumour flare reactions may occur transiently (can be prevented by anti-androgens or short-term oestrogens)
  - can be performed via total or subcapsular technique [2]
- LHRHa can be given alone as standard hormone therapy for metastatic disease [1,2]; LHRHa include [2]:
  - buserelin
  - goserelin
  - leuprorelin
  - triptorelin
- combined androgen blockade is not recommended as first-line treatment [1]
- anti-androgen therapy:
  - consider anti-androgen monotherapy with bicalutamide for men willing to accept adverse effects, eg gynaecomastia [1]
  - benefits include [1]:
    - retainment of sexual function
    - less reduction in bone mineral density
- if bilateral orchidectomy or LHRHa monotherapy fails, consider an anti-androgen as second-line therapy [1]
- steroidal anti-androgens:
  - block androgen receptors and inhibit gonadotrophin release [2]
  - side effects include:

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- loss of libido [2]
- erectile dysfunction [2]
- gynaecomastia (rare) [2]
- elevations in risk of diabetes [22]
- skeletal fractures [22]
- cardiovascular-related mortality [22]

Hormone refractory disease:

- androgen withdrawal therapy or combined androgen withdrawal blockade no longer control disease [1]
- treatment options should be discussed by a urological cancer multidisciplinary team (MDT) [1]
- patients should have continued androgen suppression [5]
- may respond to oestrogen or corticosteroids [1]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes for urological cancer. London: NICE; 2002.

[5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-8.

[22] Taylor LG, Canfield SE, Du XL. Review of major adverse effects of androgen-deprivation therapy in men with prostate cancer. Cancer 2009; 115: 2388-99.

7 Consider deferred treatment

Quick info:

Patients with metastatic disease should only be considered for deferred treatment if the patient is asymptomatic and wishes to avoid treatment-related side effects [2].

Hormonal treatment should not be deferred if there is a risk of spinal cord compression [3].

References:

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes for urological cancer. London: NICE; 2002.

9 Management of hormone therapy complications

Quick info:

Complications include [1]:

- hot flushes – first-line treatment is synthetic progestogens (administered orally or parenterally)
- gynaecomastia:
  - complication of long-term (greater than 6 months) bicalutamide monotherapy
  - administer prophylactic radiotherapy (orthovoltage or electron beam radiotherapy) to the breast buds during the first month of bicalutamide therapy
  - consider weekly tamoxifen for the treatment of gynaecomastia, if radiotherapy is unsuccessful
- tiredness

Reference:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

10 Close follow-up

Quick info:

If a deferred treatment policy is chosen, close follow-up must be possible [2].

Reference:

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

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11 Management of hormone refractory disease

Quick info:

Prostate cancer is considered hormone refractory when androgen withdrawal therapy or combined androgen withdrawal blockade no longer control disease [1].

Treatment options should [1]:

- be discussed with the urological cancer multidisciplinary team (MDT)
- seek opinion from an oncologist and/or palliative care specialist

Reference:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

12 Follow-up

Quick info:

Follow-up:

- aims to identify local recurrence [1]
- aims to identify and treat complications associated with treatment [1]
- aims to provide prompt treatment when further symptoms develop [3]
- should provide information [1]
- should audit outcomes [1]
- should include:
  - physical examination [1]
  - blood tests [1]
  - prostate-specific antigen (PSA) [2]; PSA should be monitored [1]:
    - 6 weeks following treatment
    - every 6 months for the first 2 years following treatment
    - yearly thereafter
  - imaging [1]
  - transrectal ultrasonography (TRUS) and biopsy [2]
  - bone scintigraphy – indicated if PSA levels are elevated [2]
- guideline recommendations differ with regards to digital rectal examination (DRE) as part of routine follow-up:
  - the National Institute for Health and Clinical Excellence do not recommend DRE while PSA levels remain at baseline levels [1]
  - the European Association of Urology recommend DRE as first-line examination in follow-up after radiotherapy or radical prostatectomy [2]
- if treated with radical radiotherapy, should be offered flexible sigmoidoscopy every 5 years

Follow-up after hormone treatment [2]:

- monitor response to treatment
- monitor compliance
- detect complications
- monitor serum PSA levels
- monitor creatinine, haemoglobin, and liver function:
  - creatinine can detect upper urinary tract obstruction
  - haemoglobin and liver function tests can indicate disease progression or toxicity to treatment

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes for urological cancer. London: NICE; 2002.

13 Consider alternative hormonal therapy

Quick info:

Alternative hormone therapies include [2]:

Metastatic prostatic disease

- bicalutamide (non-steroidal anti-androgen)
- switching to an alternative anti-androgen therapy
- anti-androgen withdrawal plus ketoconazole
- oestrogen [1]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

14 Consider chemotherapy

Quick info:

Chemotherapy:

- should be considered for hormone refractory disease [1] that is symptomatic [3,5]
- should be started immediately for symptomatic patients and occur at 3 weekly intervals [2]
- with docetaxel [2] is recommended if the patient's Karnofsky performance score is 60% or more [1]
- treatment should be stopped [1]:
  - after the completion of planned treatment of up to 10 cycles (repeated cycles are not recommended if disease recurs after completion of chemotherapy)
  - if severe complications occur
  - if the disease progresses
- with docetaxel is not recommended for recurrent disease [1]
- docetaxel plus prednisolone is the only chemotherapy licensed for hormone-refractory prostate cancer [1]
- with mitoxantrone plus prednisolone [2] can be considered for patients with a poor performance status [1]
- side effects of docetaxel include [24]:
  - hypersensitivity reactions, ie flushing, skin reactions, hypotension
  - bone marrow suppression, ie neutropenia, thrombocytopenia, anaemia
  - fluid retention
  - peripheral neuropathy
  - cardiac disorders
  - tiredness
- should occur in the context of a clinical trial [2]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes for urological cancer. London: NICE; 2002.

[5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-78.

[24] National Institute for Health and Clinical Excellence (NICE). Docetaxal for the treatment of hormone refractory prostate cancer. Technology appraisal guidance 101. London: NICE; 2006.

15 Consider corticosteroids

Quick info:

Corticosteroids [1]:

- can reduce adrenal androgen production by suppressing adrenocorticotrophic hormone (ACTH)
- are recommended as a third-line hormonal therapy after androgen withdrawal and anti-androgen therapy [5]
- include dexamethasone, prednisone, and hydrocortisone

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-78.

16 Management of pelvic and bone complications

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Quick info:

Obstructive uropathy [1]:

- can be caused by unilateral or bilateral obstruction of the ureters
- can result in impaired renal function
- is potentially fatal
- can be managed by:
  - decompression via:
    - external placement of a nephrostomy tube; or
    - internal insertion of a double J stent from the bladder to the kidney
  - high-dose steroids

Haematuria [1]:

- can be caused by bleeding from the prostatic urethra or bladder
- can be managed by:
  - endoscopic control of bleeding points
  - palliative radiotherapy to the bladder base or prostate

Bowel obstruction [1]:

- can be caused by extension of disease into the rectum, resulting in luminal narrowing or complete obstruction
- can be managed by:
  - dietary changes
  - aperients
  - radiotherapy
  - defunctioning colostomy (complete obstruction of the lower bowel)

Bisphosphonates:

- are not recommended for the prevention and reduction of complications associated with bone metastases in hormone refractory disease [1]
- can be used to treat cancer-related hypercalcaemia [1]
- can be used to treat osteoporosis caused by hormonal therapy, but should not be routinely used for patients receiving androgen withdrawal therapy [1]
- patients should have a dental examination before bisphosphonate treatment [2]

Radio-isotopes:

- should be considered for pain management [3], such as [1,2]:
  - Strontium-89 (Sr-89)
  - Samarium-153 (Sr-89)

Radiotherapy [1]:

- can improve bone pain [2]
- can treat spinal cord compression caused by metastases in the vertebrae

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[2] Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. European Association of Urology (EAU). The Netherlands; 2009.

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes for urological cancer. London: NICE; 2002.

17 Consider imaging

Quick info:

Magnetic resonance image (MRI) should be performed for patients with extensive metastases in the spine [1,5] or back pain to detect cord compression [5].

Routine MRI is not recommended [1].

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[5] Horwich A, Parker C, Kataja V. Prostate cancer: EMSO clinical recommendations for diagnosis, treatment and follow-up. Annals of Oncology 2009; 18: iv76-8.

18 Follow-up

Metastatic prostatic disease

Quick info:

Follow-up:

- should be carefully observed so that prompt treatment can be initiated if symptoms develop [3]
- aims to identify and treat complications associated with treatment [1]
- should provide information and address concerns [1]
- should audit outcomes [1]
- should include [1]:
  - physical examination
  - blood tests, including prostate-specific antigen (PSA); PSA should be monitored:
    - 6 weeks following treatment
    - every 6 months for the first 2 years following treatment
    - yearly thereafter
  - imaging
- if treated with radical radiotherapy, patient should be offered flexible sigmoidoscopy every 5 years [1]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[3] National Institute for Health and Clinical Excellence (NICE). Improving outcomes for urological cancer. London: NICE; 2002.

19 Consider palliative care

Quick info:

Palliative care should:

- manage pain and other symptoms [1]
- provide provisions for psychological, social, and spiritual support [1]
- achieve the best quality of care for the patient and family [1]
- should involve primary care services, but there should be close co-operation with the multidisciplinary team (MDT) and specialist palliative care staff [1]
- ensure patient's transitions between care settings are smooth [8]
- provide tailored information [8]
- involve regular assessment of disease [8]
- take into account personal preferences [1]

References:

[1] National Institute for Health and Clinical Excellence (NICE). Prostate cancer – diagnosis and treatment. Clinical guideline 58. London: NICE; 2008.

[8] Map of Medicine (MoM) Clinical Editorial team and Fellows. London: MoM; 2010.

Metastatic prostatic disease

Key Dates

Due for review: 31-May-2011
Last reviewed: 29-Jul-2010, by International
Updated: 29-Jul-2010

Accreditations

The pathway is accredited by:

The Chief Knowledge Officer of the NHS:
Accreditation attained: 30-Apr-2010
Due for review: 31-May-2011
Disclaimer

Evidence summary for Metastatic prostatic disease

This pathway has been developed according to the Map of Medicine editorial methodology (http://mapofmedicine.com/whatisthemap/editorialmethodology). The content of this pathway is based on high-quality guidelines [1-3,5,7,9,11,20,24], critically appraised meta-analyses and systematic reviews [10,12-19,21-23]. Practice-based knowledge has been added by contributors with front-line clinical experience [4,8], including any literature endorsed by the contributor group [6].

Search date: Dec-2009

References

This is a list of all the references that have passed critical appraisal for use in the pathway Prostate cancer

ID	Reference
1	National Institute for Health and Clinical Excellence (NICE). Prostate cancer: diagnosis and treatment. Clinical guideline 58. London: NICE; 2008. http://www.nice.org.uk/nicemedia/pdf/CG58FullGuideline.pdf
2	Heidenreich A, Bolla M, Joniau S et al. Guidelines on prostate cancer. The Netherlands: European Association of Urology (EAU); 2009. http://www.uroweb.org/fileadmin/tx_eauguidelines/2009/Full/Prostate_Cancer.pdf
3	National Institute for Health and Clinical Excellence (NICE). Improving outcomes in urological cancers. London: NICE; 2002. http://www.nice.org.uk/nicemedia/pdf/Urological_Manual.pdf
4	Contributors invited by Map of Medicine. 2010.
5	Horwich A, Parker C, Kataja V. Prostate cancer: ESMO Clinical Recommendations for diagnosis, treatment and follow-up. Ann Oncol 2009; 18: iv76-8. http://www.ncbi.nlm.nih.gov/pubmed/19454471
6	Prostate Cancer Risk Management Programme (PCRMP). Information for primary care: PSA testing in asymptomatic men. London: NHS Screening Programmes; 2009. http://www.cancerscreening.nhs.uk/prostate/prostate-booklet-text.pdf
7	Clinical Knowledge Summaries (CKS). Urological cancer - suspected. Newcastle Upon Tyne: CKS; 2009. http://www.cks.nhs.uk/urological_cancer_suspected/management/quick_answers/scenario_urological_cancer_suspected/prostate_cancer
8	Map of Medicine (MoM). London: MoM; 2010.
9	National Institute for Health and Clinical Excellence (NICE). Referral guidelines for suspected cancer. London: NICE; 2005. http://www.nice.org.uk/nicemedia/pdf/cg027niceguideline.pdf
10	Wallace TJ, Anscher MS. Prostate cancer. BMJ Best Practice; 2010. http://bestpractice.bmj.com/best-practice/monograph/254.html
11	American Urological Association (AUA). Prostate cancer: guideline for the management of clinically localised prostate cancer. 2007 update. Linthicum, MD: AUA; 2007. http://www.auanet.org/content/guidelines-and-quality-care/clinical-guidelines/main-reports/proscan07/content.pdf
12	Scattoni V, Zlotta A, Montironi R. Extended and saturation prostatic biopsy in the diagnosis and characterisation of prostate cancer: a critical analysis of the literature. Eur Urol 2007; 52: 1309-22. http://www.ncbi.nlm.nih.gov/pubmed/17720304
13	Hovels AM, Heesakkers RA, Adang EM. The diagnostic accuracy of CT and MRI in the staging of pelvic lymph nodes in patients with prostate cancer: a meta-analysis. Clin Radiol 2008; 63: 387-95. http://www.ncbi.nlm.nih.gov/pubmed/18325358

IMPORTANT NOTE
Last reviewed refers to the date of completion of the most recent review process for a pathway. All pathways are reviewed regularly every twelve months, and on an ad hoc basis if required.

Metastatic prostatic disease

ID Reference

14 Cohen MS, Hanley RS, Kurteva T et al. Comparing the Gleason prostate biopsy and Gleason prostatectomy grading system: the Lahey Clinic Medical Center experience and an international meta-analysis. Eur Urol 2008; 54: 371-381. http://www.ncbi.nlm.nih.gov/pubmed/18395322

15 Parsons JK, Bennett JL. Outcomes of retropubic, laparoscopic, and robotic-assisted prostatectomy. Urology 2008; 72: 412-6. http://www.ncbi.nlm.nih.gov/pubmed/18267330

16 Eng MK, Katz MH, Bernstein AJ et al. Laparoscopic port-site metastasis in urologic surgery. J Endourol 2008; 22: 1581-5. http://www.ncbi.nlm.nih.gov/pubmed/18620507

17 Shelley MD, Kumar S, Wilt T et al. A systematic review and meta-analysis of randomised trials of neo-adjuvant hormone therapy for localised and locally advanced prostate carcinoma. Cancer Treat Rev 2009; 35: 9-17. http://www.ncbi.nlm.nih.gov/pubmed/18926640

18 Morgan SC, Waldron TS, Eapen L et al. Adjuvant radiotherapy following radical prostatectomy for pathologic T3 or margin-positive prostate cancer: a systematic review and meta-analysis. Radiother Oncol 2008; 88: 1-9. http://www.ncbi.nlm.nih.gov/pubmed/18501455

19 Pieters BR, de Back DZ, Koning C et al. Comparison of three radiotherapy modalities on biochemical control and overall survival for the treatment of prostate cancer: a systematic review. Radiother Oncol 2009; 93: 168-173. http://www.ncbi.nlm.nih.gov/pubmed/19748692

20 National Institute for Health and Clinical Excellence (NICE). High dose rate brachytherapy in combination with external-beam radiotherapy for localised prostate cancer. London: NICE; 2006. http://www.nice.org.uk/nicemedia/pdf/IPG174guidance.pdf

21 Boustead G, Edwards SJ. Systematic review of early vs deferred hormonal treatment of locally advanced prostate cancer: a meta-analysis of randomized controlled trials. BJU Int 2007; 99: 1383-9. http://www.ncbi.nlm.nih.gov/pubmed/17346269

22 Taylor LG, Canfield SE, Du XL. Review of major adverse effects of androgen-deprivation therapy in men with prostate cancer. Cancer 2009; 115: 2388-99. http://www.ncbi.nlm.nih.gov/pubmed/19399748

23 Shelley MD, Kumar S, Coles B et al. Adjuvant hormone therapy for localised and locally advanced prostate carcinoma: a systematic review and meta-analysis of randomised trials. Cancer Treat Rev 2009; 35: 540-6. http://www.ncbi.nlm.nih.gov/pubmed/19493624

24 National Institute for Health and Clinical Excellence. Docetaxel for the treatment of hormone refractory prostate cancer. National Institute for Health and Clinical Excellence 2006; http://www.nice.org.uk/nicemedia/pdf/TA101guidance.pdf

Disclaimers

